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Domestic Burner Business Growing Factor Oil Concerns Must Study

By Ward K. Halbert

STAFF REPRESENTATIVE

CHICAGO, Sept. 8

THREE years of experimental work has lifted the domestic oil heating business out of the realm of "guess-work." Now it is an applied science pretty generally understood by the public. Persons engaged in the business have a fairly well defined code of ethics. There are laws to govern the business and they are of various kinds, economic, scientific and statutory.

Although these laws have come from several sources, they are fairly harmonious, and the business is growing so fast that it promises to tax the oil industry to meet its requirements this fall and winter.

Briefly, here is what is taking place in the home-heating business currently:

Underwriters' Laboratories of Chicago, with recently augmented facilities, have tested numerous oil burners this year and have found 11 makes worthy of listing. Three of the 11 are gravity-burners and several of them sell at prices which most any householder can afford to pay.

Manufacturers of the better burners are behind with their orders and their crews are busy every day making installations in residences, large and small. Major tank building companies have turned their attention to home requirements, thereby keeping busy while the orders for big jobs are not so numerous.

Oil jobbers all over the middle west are driving along the residence streets of their home towns every day, recording street and number every time they see a new tank in the yard or a fresh excavation. Then they send salesmen to each new prospect thus obtained and estimate their distillate requirements by figuring gallons per day per customer.

Refiners have begun to figure that fall will be more profitable to them than summer has been. Recent autumns have afforded fair outlet for gasoline, and in addition to that there is reason to expect a fair price for kerosene and distillate. Gas oil today is higher than it was last September by about ½ cent, and 41-43 kerosene is worth more than it was at any time last year.

An association of oil burner manufacturers and dealers is busy with matters of legal significance, and many cities are adopting reasonable and intelligent ordinances governing oil burning. Furthermore insurance companies are making riders for ordinary fire insurance policies which permit a householder to install an oil burner with complete protection under his policy.

Milwaukee's Ordinance

No little excitement was caused in the general Chicago vicinity about two weeks ago when W. D. Harper, city building inspector of Milwaukee, threatened suit against three or four burner manufacturers for making installations which did not meet the requirements of city law. Milwaukee oil men expect Mr. Harper to institute suit at almost any time. What is more, they do not care much if he does, for it was a group of oil men and engineers who framed the ordinance now on the books, for the public's protection.

In a statement published in Milwaukee papers on Aug. 16, Mr. Harper declared that fire insurance policies call for compliance with city law, and policies are voided the minute illegal heating installations are made. At least in a great many cases. Mr. Harper is correct, for numerous policies require that insured property be always in compliance with law, and in the event of a fire loss a property owner would never be able to collect his insurance unless his installation complied with city requirements.

The incident in Milwaukee may be an extreme case but it is not an isolated one. Most towns of any size are getting ordinances on their statute books for the protection of life and property. In many cases they are doing like Milwaukee did, and are calling resident oil men and engineers into conference before the proposed ordinances are drafted. In such cases the ordinances are fair to all parties concerned. Such ordinances protect insurance companies also from loss by law breakers.

A Lenient Statute

The Milwaukee ordinance is a reasonable one. It permits a householder to have 5,000 gallons of oil fuel in storage on his premises, provided it is buried outside the house below the level of the basement floor under five feet or more of dirt, and five feet from the wall of the house. It even allows two 300-gallon tanks under the basement if buried two feet deep. The law permits the customary 60-gallon feed tank in the basement above ground.

Compliance with regulations like that should not be a burden to any householder able to afford a burner at all. The big out-of-door tank is a great economy in the purchase of fuel and a great convenience to the oil man supplying it.

The Underwriters' Laboratories stipulate with every separate listing that the burner in question must meet local requirements. Although the engineers of the laboratories may examine an appliance thoroughly, and may find it to meet the high standards of safety maintained by the institution, yet when they list it in the manual its name is accompanied in every instance by the following paragraph:

"Standard—when fuel storage capacity conforms to local requirements, and when installation is made in accordance with requirements of inspection department having jurisdiction."

Of the 11 burners listed by the underwriters, three are of the gravity type. They are the Lillibridge, the Oliver and the Quinn. The Oliver and the

Quinn are both recently listed as standard but the Lillibridge has been enjoying the benefits of an underwriters' listing since before the oil fuel movement of recent years became popular. It has not been the rule with Underwriters' Laboratories to look with disfavor on gravity burners.

Although many gravity burners have gone on the market without applying for tests by the laboratories, so have other types of burners as well.

All of the aforementioned machines are domestic burners in every sense but one. The Johnson is of such a nature as to require somebody on the premises all the time to oversee its operation. In the case of this machine, too, there is much in its favor to offset that need. It is built to consume oil of 24 gravity and will work well on 36 gravity oil. It occupies something of a medium ground between a domestic and an industrial oil burner.

Words to the Wise

There is no longer any excuse for a householder having an oil burner, or an oil burner installation, that does not measure up to the legal requirements of his city. Standards of the Underwriters Laboratories are high but any burner manufacturer can make his product measure up to them if he tries and accepts the advice of the engineers who test his machine. The Underwriters' Laboratories is an impartial institution, maintained by the National Board of Fire Underwriters for service and not for profit.

If the householder has any doubt about what is necessary to make his tankage and installation safe, there is a way to find out. The National Board of Fire Underwriters has published a booklet containing all the needed information.

The book is 3½ x 5 inches in size and contains 30 pages. But the last eight pages in the book deal specifically with domestic oil burning installations. The booklet gives the size of tanks, strength of walls, thickness of metal from which tanks are made, capacity of tanks, size of pipe, depth to bury storage and even what else may be stored in a basement where an oil burner is operating.

For Free Circulation

Those eight pages were reprinted on page 103 of National Petroleum News for Dec. 13, 1922. It has not been changed since. Copies of the booklet may be obtained by sending a ready stamped and addressed envelope to the National Board of Fire Underwriters, 76 William st., New York City.

Although it is not the regular thing for oil men to be called upon as legal counsel, nevertheless they are often asked for advise by persons about to install a domestic burner. In such cases it might be worth while to point out the prospective burner buyer and prospective oil customer, that a mistake might leave him without insurance.

Most of the fire insurance companies of the country use what is commonly called a "Standard Policy." And although policies differ in different states, they differ mainly on methods of making adjustment. Their requirements are alike with regard to the storage of petroleum products on the premises. If a home owner is holder of a standard fire insurance policy, his policy will contain a clause like this:

"This entire policy, unless otherwise provided by agreement indorsed hereon or added hereto, shall be void if the hazard on the insured property be increased by any means within the control or knowledge of the insured, * * * or if there be kept, used or allowed on the above described premises, benzine, benzole, ether, gasoline, naptha or petroleum or any of its products of greater inflammability than kerosene oil of the United States standard—which last may be used for lights and kept for sale according to law but in quantities not to exceed five barrels, provided it be drawn and lamps filled by daylight or at a distance not less than 10 feet from artificial light."

The whole meaning of the above clause pivots on the words, "use for lights and kept for sale according to law." In the case of some city ordinances, the violators are subject not only to damage suit but to criminal prosecution, it is claimed. So in justice to his customers, an oil man can not neglect to acquaint them with their legal and economic hazards.

Crude Price Changes

OIL CITY, Sept. 6.—On Sept. 6 Joseph Seep Purchasing Agency reduced Corning crude 10 cents to $1.65. Previous change on this crude was a 15-cent reduction on Aug. 2, bringing it to $1.75.

Oil Burners Listed As Standard

Arrow—Socony Burner Corp., New York, (Standard of N.Y.)—Oil burner designed to burn kerosene or distillate of 35 to 45 degrees A.P.I. For installation in hot water heaters, steam boilers, and hot air furnaces. Marking: "Arrow" on etched brass name plate attached to blower housing.

Baker—"Model F." Baker Steam Motor Car & Manufacturing Co., Inc., Pueblo, Colo. Oil burner designed to burn light distillate, gas oil, or kerosene having a specific gravity of 38 to 41 degrees A.P.I. and a flash point of not less than 105 degrees F. or higher than 160 degrees F. For installation in hot water heaters, steam boilers, and hot air furnaces. Marking: "Model F" on name plate attached to blower housing.

Caloroil—and Caloroil Type A. Caloroil Burner Corp., New York City. Oil burner designed to burn kerosene or distillate of 36 to 40 degrees A.P.I. for installation in various types of hot water heaters, steam boilers, and hot air furnaces. Marking: "Caloroil" and "Caloroil, Type A" on name plate attached to float tank cover.

Electrol—"Type S." Home Appliance Corp., St. Louis, Oil burner designed to burn kerosene or distillate of 36 to 40 degrees A.P.I. for installation in hot water heaters, steam boilers, and hot air furnaces. Marking: "Electrol Type S" on name plate attached to blower housing.

Johnson—Type 22. S. T. Johnson Co. San Francisco, Calif. Manually operated oil burner, pump feed type, without automatic means for closing oil supply to the burner in event the flame is extinguished. Designed to burn fuel oil 24 to 36 degrees A.P.I. and suitable for installation in hot water boiler, steam boiler, and hot air furnaces. Marking: "Type No. 22" on etched brass name plate attached to rear of blower housing.

Kleen Heet—Types G and E. Winslow Boiler & Engineering Co., Chicago, Ill. Oil burner designed to burn kerosene or distillate of 36 to 40 degrees A.P.I. For installation in various types of hot water heaters, steam boilers, and hot air furnaces. Marking: "Kleen Heet Type G" or "Kleen Heet Type E," Nos. 13, 16, 19, 56 and 80 on etched brass name plate attached to blower housing.

Lillibridge—"Types 38-D, 68-D, 99-D, and 9-11-D." Lillibridge Heating Corp., Hutchinson, Kan. Manually controlled oil vapor burner designed to burn kerosene or distillate of 36 to 40 degrees A.P.I., for installation in hot water and steam boilers.

Nokol—American Nokol Co., Chicago, Ill. Oil burner designed to burn kerosene distillate, for installation in hot water heaters, steam boilers and hot air furnaces.

Oil-O-Matic—"Types D, E and F." C. U. Williams & Son Co., Bloomington, Ill. Oil burner designed to burn kerosene or distillate of 30 to 32 degrees A.P.I., for installation in hot water heaters, steam boilers, and hot air furnaces. Marking: "Types D, E or F" on name plate.

Oliver—"No. 30A." Oliver Oil-Gas Burner Co., St. Louis, Mo. Manually operated oil vapor burner designed to burn kerosene or distillate of 38 to 40 degrees A.P.I., for installation in hot water and steam boilers and hot air furnaces. Marking: "No. 30A" cast on manifold of burner and on a name plate attached to anti-flooding device.

Quinn—Quinn Oil Burner Corp., Port Richmond, Staten Island, N. Y. Manually controlled oil vapor burner designed to burn kerosene or distillate of 36 to 40 degrees A.P.I., for installation in hot water and steam boilers and hot air furnaces. Marking: "Quinn Oil Burner" cast on automatic cut-off.

THIS WEEK'S OIL NEWS SUMMARIZED

Crude Production By Districts

Oklahoma

	Sept. 6	Aug. 30
Bristow	49,075	49,050
Burbank	73,025	73,025
Cushing	23,640	23,640
Cromwell	51,420	60,350
Healdton	14,710	15,720
Hewitt	19,300	19,345
Osage except Burbank	53,000	53,900
Stroud	17,960	19,520
Tonkawa	102,750	90,620
Wewoka	7,023	7,050
Other fields	131,095	131,190
	542,998	544,370
Decrease		1,372

* * *

Kansas

Augusta Douglass	3,790	3,740
Blankenship District	2,740	2,775
Elbing Peabody	7,610	7,950
El Dorado	16,100	15,750
Fox Bush	3,250	3,310
Greenwood County	25,500	24,500
Other fields	26,500	26,000
	85,490	84,015
Increase		1,475

* * *

Texas and Coastal Louisiana

Mexia, Currie, Richland	54,263	53,585
Corsicana, Powell	75,560	78,395
Wichita Falls District	72,640	73,550
Ranger Lime	32,950	34,010
Ranger Sand*	8,925	9,100
West Texas, (Reagan and Mitchell Counties)	7,665	5,735
Panhandle	1,040	1,150
San Antonio, Luling, Mirando	39,040	44,265
Coastal Texas	73,115	71,130
Coastal Louisiana	6,890	6,720
Total	372,088	377,640
Decrease		5,552

*Includes Young, Palo Pinto, Shackleford, Coleman and Brown counties.

MARKETING

Kansas-Oklahoma

Gasoline easier as buying slackens. Natural gasoline scarce and stronger. Kerosene less active. Gas oil easier. Fuel scarce but price steady. Lubricating oils quiet. Wax sold up, higher prices quoted on future deliveries.

North Texas

Export trade helps gasoline.

Chicago

Gasoline easier. Kerosene scarce and strong. Gas oil inactive. Fuel oil strong and active. Distillate strong and scarce.

Pennsylvania

Gasoline steady. Kerosene strong and scarce. Fuel good. Neutrals holding up with prices steady. Cylinder stocks stronger. Wax sold up and futures strong.

Exports

Fair sized movement of gasoline and kerosene, with latter stiffer. Waxes fairly firm. Gas oil quiet. Bunker oil weaker. Cylinder stocks offered more freely. Numerous small orders placed. Spindle oils flat.

PRODUCTION

Estimates of the production in the United States for the week ended Sept. 6 aggregated 2,035,972 barrels, which was a loss of 9900 barrels from the previous week's total. Oklahoma's record mark of the previous week was lowered by 1372 barrels and barring the discovery of new big-well territory the decline seems likely to continue for a time. Louisiana and Arkansas are falling in production and probably will continue to do so for some time. The largest decline over the week was in Texas, which lost 5500 barrels. One price change was made during the week, Corning, O., crude being reduced 10 cents.

Crude Production By Districts

California

	Sept. 6	Aug. 30
Long Beach	149,000	149,000
Santa Fe Springs	56,000	57,000
Torrance	54,000	55,000
Huntington Beach	41,000	42,000
Dominguez	28,000	26,000
Rest of State	289,650	290,600
Total	617,650	619,600
Decrease		1,950

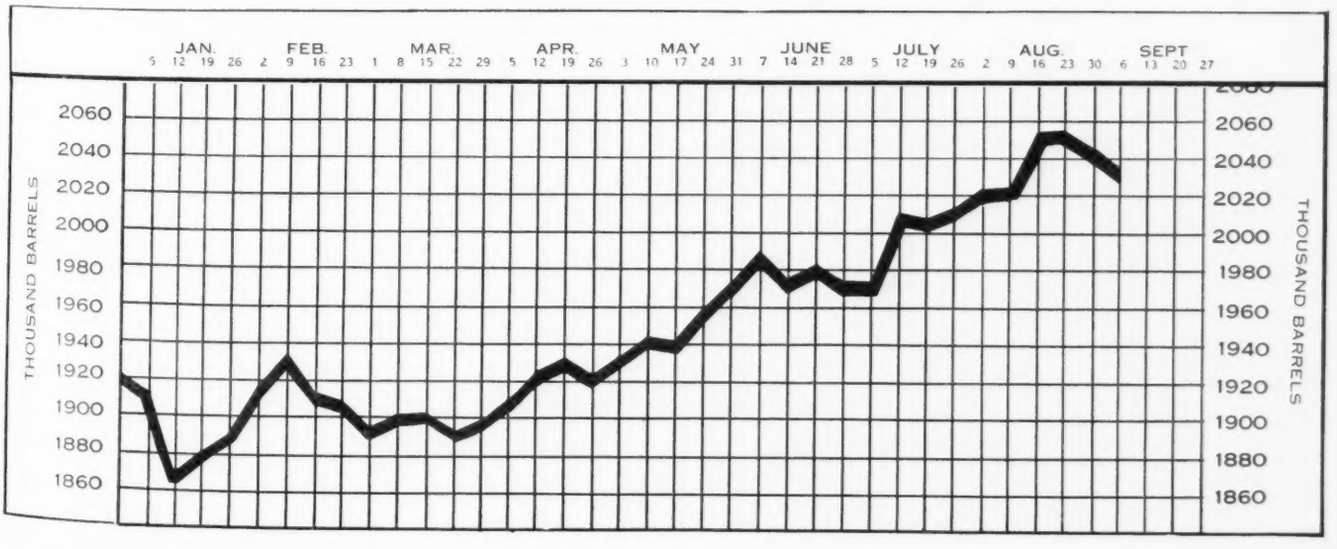
* * *

Louisiana-Arkansas

Daily average	Sept. 4	Aug. 28
Caddo, light	10,112	10,000
Caddo, heavy	1,992	2,000
De Soto Red River	5,230	5,300
Cotton Valley	6,134	7,000
Haynesville	17,426	17,610
Homer	7,284	7,480
Bellevue	4,510	4,600
El Dorado	11,696	12,000
Smackover, light	37,026	37,080
Smackover, heavy	83,037	85,120
Stephens	2,080	2,080
Nevada County, Ark.	1,459	1,340
Total	187,746	191,630
Decline		3,884

Rocky Mountain	126,000	125,375
Eastern	104,000	103,300
Total U. S.	**2,035,972**	**2,045,930**
Decrease		**9,958**

Watch The Trend Of The Week's Production



Hearing Starts On Nebraska Suit To Oust Oil Companies

By W. K. Halbert
STAFF REPRESENTATIVE

OMAHA, Sept. 8

ASSISTANT Attorney General T. J. McGuire won the first tilt in the case of Nebraska against a dozen oil companies before Judge W. E. Hastings, in the state district court in Omaha today. The state is seeking temporary injunction against what it pleased to term the oil combine for alleged price fixing. The day's only important development was when the court denied the motion of the defense to withhold issuance of the restraining order and appoint a master to hear the case on its merits.

Nearly two years ago the National Association of Attorneys General met in Minneapolis and plotted a sweeping investigation of oil industry in America. Last year in Chicago the same group selected Attorney General Ora L. Spillman of Nebraska to lead the performance and this case is the result of Spillman's work. Much time and effort has been spent by him and his assistants this year hunting evidence and procuring supporting affidavits to show the oil jobbers of Nebraska to be all in cahoots.

Early this last spring Spillman started proceedings to get most financially responsible oil companies ousted from the state or dissolved and the idea won him national notoriety. At first he named 15 companies as defendants but later learned that Standard of Indiana did not do business in Nebraska and that The Texas Co. and the Texaco Co. were the same thing so the number dwindled to 13. Another defendant, he has lately discovered, sells only lubricating oil, and now there are 12.

Nature of Case Changed

The original ouster proceeding was halted a few weeks back and the case acquired its present form. This summer 300 pages of sworn statements are unloaded upon the district court as exparte testimony. The ouster proceeding has not been wholly abandoned for Mr. McGuire stated in open court today that the petition for restraining order was only to get a judgment against the oil companies after which ouster would be sought as a permanent verdict.

Upon that 300-page bale of one-sided paper testimony the argument started today and promises to last anywhere from a week to a month. Judge Hastings has indicated that he will allow ample time for complete hearing and the state lawyers have only started. McGuire spent this forenoon telling the court about tank wagon and service station prices—the existence of oil associations—how rebating is accomplished and denouncing the ordinary workings of competition. By noon he finished expounding information known for years by everybody except himself.

This afternoon McGuire still had the floor and began by telling how much money Charles M. Sutherland makes per year. His idea seemed to be that no group of business men would pay any individual $3,000 annually to do nothing but keep himself and them posted on the business situation. By innuendo he tried to prove Sutherland carried a big stick to make oil men hold to uniform price structure.

Reading every word of the tiresome testimony aloud and elaborating of parts of it, the lawyer managed to cover roughly 100 of the 300 pages before nightfall. When he has finished there are 10 more lawyers representing 12 defendants who must be heard even if none of the other orators on the state's staff want to talk.

Late in the afternoon Arthur Mullen, representing Shaffer Oil & Refining Co. asked to be heard and suggested that litigation might drag on indefinitely and suggested appointment of a master, pointing out that no injury was being done or likely to be done to justify temporary injuncton. Judge Harding's decision was to hear it out before deciding.

This litigation must not be confused with the case in which Governor Bryan of Nebraska figures, the only coincidence being that they are in the same state. Bryan and Spillman are of opposite political faith.

Defendants in this case are Standard Oil Co. of Nebraska, Sinclair Refining Co., Texas Co., Tidal Refining Co., Shaffer Oil & Refining Co., National Refining Co., Nicholas Oil Corp., Omaha Refining Corp., Stelk Oil Corp., Manhattan Oil Co., United States Oil Works, Anderson Johnson Co., and the Nebraska & Iowa Oil Co.

The last mentioned handles no gasoline.

It is vain to attempt to forecast outcome of the litigation at this stage.

Coming Meetings

West Virginia Oil & Natural Gas Ass'n., Charleston, W. Va., Sept. 17, 18.

National Petroleum Association, Hotel Traymore, Atlantic City, N. J., Sept. 17, 18, 19.

Refinery Credit Managers, Jefferson Hotel, St. Louis, Mo., Sept. 17, 18, 19.

Pennsylvania Independent Oil Men's Ass'n., Penn-Harris Hotel, Harrisburg, Pa., Sept. 22.

Thirteenth Annual Safety Congress, Petroleum Section, Brown Hotel, Louisville, Ky., Sept 29 to Oct. 3.

International Petroleum Exposition, Tulsa, Oct. 2 to 11.

National Petroleum Marketers Ass'n., Public Hall, Cleveland, O., Nov. 18, 19, 20.

N. P. N. wil be glad to carry notices of meetings of national associations, state jobbers associations and other organizations in which oil men are interested. Notices should be sent to the Editorial department a month before meetings are to be held.

Refinery Credit Managers To Meet Sept. 18

TULSA, Sept. 8.—Refinery credit managers from all parts of the country will meet at the Jefferson hotel at St. Louis on Sept. 17, 18 and 19, for their regular fall conference, it was announced here today by H. M. Edinger, treasurer of the Barnsdall Refining Co., who is to be chairman of the meeting.

The last meeting of the group was held at Kansas City in the spring.

Lax credit terms in the petroleum industry will be given particular study by the credit managers. Their program includes a number of speakers from the east as well as the west. Lax credit is considered by some credit men in the industry as being largely responsible for the overbuilding of the distributing branch of the business.

F. A. Pielsticker, president of the Western Petroleum Refiners Association, was a guest of the credit men at their last meeting. Apparently he was impressed with the work of the group since he has appointed a committee of members of the board of directors of the association to attend the St. Louis conference.

Those appointed are: J. L. Walsh of the Mutual Oil Co., Kansas City; W. M. Welch of the Tidal Refining Co., Tulsa; G. G. Woodruff of the Roxana Petroleum Corp., St. Louis; and D. E. Buchanan of the Chestnut & Smith Corp., Tulsa.

The program of papers has not been entirely completed as yet. Following are some of the speakers with their subjects: J. W. Hallman of the Sun Oil Co., Philadelphia, will report on the annual convention of the National Association of Credit Men recently held at Buffalo. W. Z. Brown of the Producers & Refiners Corp., Denver, will talk on terms and discounts on gasoline. K. R. Hankinson of the Tidewater Oil Co., New York, will speak on terms and discounts on lubricating oils. M. E. Kleespie of the Waite Phillips Co., Tulsa, will lead a discussion of service and bulk station credits. F. E. Hersig of the Paragon Refining Co., Toledo, is to give methods for analyzing jobber statements.

Does Increasing Yield Of Gasoline Cause Industry To Fool Itself?

By Paul Truesdell

STAFF REPRESENTATIVE

CLEVELAND, Sept. 8

WHILE everybody in the oil business undoubtedly realizes that the increased use of cracking processes is one of the big factors that has laid the industry under a staggering load of excess crude and gasoline stocks, an analysis of the figures just put out by the Bureau of Mines, covering July operations of American refineries, gives emphasis to the point.

The bureau's figures, compiled by G. R. Hopkins, petroleum economist, show that the yield of gasoline from the crude and distillates run to stills in July, 1924, was almost five per cent greater than the yield obtained in July a year ago.

July, 1923, showed a daily average of 1,695,572 barrels (or 71,213,924 gallons) of crude and cracking stock, gas oil and fuel oil mostly, run to stills and the refining of this oil produced a daily average of 20,545,550 gallons of gasoline, a yield of about 28.8 per cent. In other words, the refiner running 100 gallons of crude through his stills was getting about 28.8 gallons of gasoline.

A good many refiners had cracking plants in July, 1923, it is true, but with a lot of them it was a pretty new thing. As they learned how to operate their cracking plants more efficiently and as more of them turned to cracking, the percentage of gasoline yield from the refiner's barrel of crude began to go up. It has been going up steadily ever since but so gradually that nobody has paid much attention to it.

The refiners haven't notice it, apparently, and have kept on increasing their crude runs as they wanted to make more gasoline. And they made much more than they thought they were making basing their idea of their yield on their experience in years gone by. In other words, their increasing yield has been sneaking up on them.

In July, 1924, the refiners ran an average of 1,705,711 barrels or 71,639,862 gallons of crude and other oils through their stills. That amount of charging stock yielded 23,934,671 gallons of gasoline a day, or a yield of about 33.5 per cent. In other words, every hundred gallons of crude the refiner ran through his plant in July this year, yielded him 33.5 gallons of gasoline instead of 28.8 gallons as was the case in the same month of the preceding year. The increase in daily average crude run in July, 1924 over July, 1923, was only 10,139 barrels, or 425,838 gallons, but it netted more than three million gallons a day more of gasoline.

The effect on the future of the gasoline market of stocks of crude on hand also are illuminating. Leaving out of consideration the stocks of gasoline on hand July 31, which amounted to almost a billion and a half gallons, stocks of crude on the same date totalled 356,240,000 barrels. This is an increase of about 53 million barrels over the stocks on hand July 31, 1923.

This might not be so bad, an increase of stocks by that much in view of the big increase in gasoline consumption, if it were not for the fact that the extra 50 million barrels of crude, on the basis of the increased yield of gasoline in refining, represents so much more potential gasoline.

When we had 293,054,000 barrels of crude in storage at the end of July, 1923, that crude represented, at the percentage of gasoline yield then being obtained by refiners—28.8 per cent—3,544,781,184 gallons of gasoline. At the present rate of gasoline recovery—33.5 per cent—that same 293 million barrels of stored crude would represent 4,123,269,780 gallons of gasoline and when you add the 53,186,000 barrels of crude that has been added to stocks since July 31 a year ago that represents nearly 75,000,000 gallons more of gasoline.

And the 33.5 per cent recovery of gasoline is not a stationary percentage. It is growing higher all the time. For instance, the yield in June, when the amount of oil charged to stills per day was 1,905,658 barrels and the daily average gasoline output was 24,569,357, the yield was only 31 per cent.

While the consumption of gasoline is mounting from year to year and from month to month, taking comparable seasons for comparison, it is a question if the increasing skill of the refiner is not a good deal more than making up for the extra demand. As showing this situation, domestic demand in July, 1923, is given in the Bureau of Mines figures as 21 million gallons a day in round numbers. In July of this year, that demand was 25 million gallons a day. Carried out in terms of yearly consumption that would mean an increase of more than a billion gallons a year. While of course such a demand will not continue through the winter months, it is likely that each winter month even will show an increase in consumption over the corresponding month of the preceding year.

Right now, at the prevailing yield of gasoline 33.5 per cent (unless it went up still higher in August) the 356,240,000 barrels of oil in storage represents 5,011,876,800 gallons of gasoline besides the nearly one and a half billion gallons of refined gasoline in storage now.

The figures of the Bureau of Mines show:

Comparative Analysis Of Refinery Operations For July, 1924

(Bureau of Mines Figures)

	Production	Imports*	Exports*	Stocks End of period	Domestic Demand
GASOLINE					
July '23	636,912,059	22,634,719	83,721,099	1,165,389,340	674,019,467
January '24	695,322,500	19,309,197	88,823,007	1,200,287,779	500,420,561
February	677,740,318	5,189,928	103,546,045	1,383,383,889	396,288,091
March	743,248,292	13,223,836	85,090,057	1,587,584,872	467,181,088
April	754,773,232	7,627,299	116,941,248	1,625,869,129	607,175,026
May	**779,194,019	14,265,697	96,879,769	1,649,953,755	672,495,321
June	737,080,701	13,828,926	115,330,959	1,598,858,219	686,674,204
July	741,974,813	7,553,863	87,797,104	1,466,558,939	794,030,852
KEROSENE					
July '23	188,226,251	11,060	59,821,009	269,459,847	123,257,457
January '24	217,767,931	20,536	64,762,389	300,265,249	135,956,496
February	196,826,060	24,070	73,408,906	306,727,001	116,979,472
March	200,038,627	20,835	53,036,540	330,009,861	123,740,062
April	203,185,921	56,787	88,863,901	288,964,972	155,423,696
May	199,992,393	47,042	79,421,026	304,005,726	105,577,655
June	183,141,014	15,675	82,438,794	293,322,967	111,400,654
July	194,201,141	65,232	80,884,470	301,157,349	105,547,521
GAS AND FUEL OILS					
July '23	1,053,242,507	46,259,234	120,942,731	1,400,813,790	901,770,327
January '24	1,062,892,393	36,471,249	109,908,000	1,471,544,338	1,032,946,015
February	1,025,421,651	59,830,201	112,994,698	1,491,173,016	952,628,476
March	1,114,411,725	48,619,520	134,973,335	1,487,463,907	1,031,767,019
April	1,116,763,663	41,826,326	120,344,289	1,536,337,206	989,372,401
May	1,155,935,780	63,630,173	133,852,785	1,555,662,866	1,066,387,508
June	1,106,711,936	45,807,861	143,110,953	1,618,563,529	946,508,181
July	1,102,785,843	53,166,789	154,275,024	1,603,643,206	1,016,597,931
LUBRICANTS					
July '23	93,960,874	486,922	23,603,187	224,951,955	71,029,884
January '24	94,534,650	2,897	25,175,405	243,224,109	68,923,103
February	93,824,414	32,566	33,526,615	253,845,381	49,709,093
March	101,126,865	29,436	40,664,791	249,789,.26	64,547,865
April	96,966,565	18,617	34,261,964	251,047,444	61,464,800
May	104,438,537	223,419	46,783,286	243,732,406	65,193,708
June	96,994,523	26,965	33,500,017	248,585,972	58,607,905
July	87,489,694	34,289	25,156,414	245,625,869	65,347,672

*From Bureau of Foreign and Domestic Commerce. Exports include shipments to Alaska, Hawaii, and Porto Rico.

**Revised Figures.

The domestic demand for gasoline in July amounted to 794,030,852 gallons, representing an increase of 107,000,000 gallons over the consumption figures for June, in which month a new high-record mark had been set. The daily average demand for gasoline in July was 25,613,898 gallons, an increase over the June daily demand of 11.9 per cent.

The production of gasoline during July amounted to 741,974,813 gallons, almost 5,000,000 gallons more than in June, and 105,000,000 gallons more than the output for July a year ago. The daily average production of gasoline in July, 1924, amounted to 23,934,671 gallons, representing a decrease in daily average production from June of 2.6 per cent, but an increase of 16.5 per cent over the daily average production in July, 1923.

Stocks of gasoline on hand at the refineries on Aug. 1 are reported by the Bureau of Mines as 1,466,558,939 gallons, a decrease from the July 1 figures of 132,299,280 gallons, but an increase of 301,000,000 gallons over the supply on hand Aug. 1, 1923. Imports and exports of gasoline both fell off during the month.

"At the July rate of consumption the nation's gasoline stocks as of Aug. 1, 1924, represented 57 days supply, compared with 54 days supply available on Aug. 1, 1923," says the bureau statement.

"The decrease in gasoline stocks during July reflected the greatly increased consumption by motor vehicles in the face of but little increased production."

Here again, the bureau takes into account only the actual gasoline in storage and says nothing about the potential gasoline, more than 5 billion barrels, contained in the stored crude.

"Kerosene production during July amounted to 194,201,141 gallons, a daily average of 6,264,552 gallons," the bureau report goes on to say. "This represents an increase of 2.6 per cent over the daily average of the previous month. Domestic demand for kerosene fell off and stocks were increased 7,834,382 gallons during the month.

"The July production of gas and fuel oils was 1,102,785,843 gallons, a daily average of 35,573,737 gallons. This represents a decrease of 3.6 per cent from the daily average of the previous month. Stocks on hand Aug. 1 were 1,603,643,206 gallons. This represents a decrease of 14,920,323 gallons from the high water mark of the previous month.

"The production of lubricants during July was 87,489,694 gallons, the lowest monthly production since September, 1923. This is a daily average of 2,822,249 gallons, a decrease of 12.7 per cent from the daily average of the previous month and a decrease of 6.9 per cent from tnat of a year ago. Stocks on hand showed very little change during the month.

"During the month of July the Bureau of Mines received reports from 254 operating refineries, with an aggregate daily crude oil capacity of 2,225,472 barrels. These refineries ran to stills a daily average of 1,705,711 barrels of both foreign and domestic crude oil, or 77 per cent of their daily operating capacity, a decrease of 2 per cent from the refinery operations of the previous month and a decrease of 1 per cent from the refinery operations of July, 1923."

Pennzoil's Lube Plant At Buffaflo Burned

BUFFALO, N. Y., Sept. 6.—Although the lubricating oil storage and compounding plant of the Pennzoil Co. was destroyed by fire Saturday night, Aug. 30, operations of the company went on without interruption over Sunday and Labor Day, according to A. S. Matthews, vice-president and general manager.

More than 100,000 gallons of lubricating oils and greases were consumed together with the buildings which covered a tract 60 by 200 feet. The garage and nine trucks also were consumed. Twenty storage tanks were destroyed. The loss was estimated at $150,000 and was covered with insurance. Gasoline tanks and their contents were saved.

As soon as the fire was under control and its extent could be determined, shipments of oil from the company's affiliated refineries at Oil City, Pa., were ordered and trucks from the company's other bulk stations in western New York rushed fresh motor oil supplies to Buffalo to care for the Sunday and holiday trade. Temporary storage facilities have been arranged and the plant will be rebuilt starting at once.

The fire is believed to have been started by a spark from a locomotive falling on the roof. It was the first fire since the predecessors of the Pennzoil Co. started operating on the site almost 40 years ago, Mr. Matthews said.

Suggests Use Of Tunnel For Pipe Line

By Special Correspondent

DENVER, Sept. 6.—A movement for the construction of a pipe line from the northwestern fields to Denver across the continental divide has been launched by Newman Erb, a New York railroad capitalist who was formerly president of the Denver & Salt Lake Railroad. The project provides for the use of an auxiliary tunnel under James Peak which is being constructed in connection with the digging of a 6-mile railroad tunnel for the Denver & Salt Lake to cost $6,700,000. The auxiliary tunnel will furnish room for water lines, electric power lines and other facilities and will have room for oil line but consent of the tunnel commission will be necessary before space can be obtained on rental basis.

Commission has agreed to take plan under consideration but it will be two years before tunnel is finished and it is doubtful if oil companies will care to wait that length of time. Erb did not disclose the interests back of the movement for business reasons but said the plan had been laid before a group of New York financiers including large oil interests who were ready to send the head of one of the big refining concerns to conduct negotiations at once. Name of this party was disclosed in confidence to the tunnel commission. Erb said he was not interested in the oil business but in the railroad in which he and his associates hold $2,500,000 of bonds.

Engineers Meet To Discuss Gasoline-Driven Coach

NEW YORK, Sept. 8.—A special meeting to be held at New York on Sept. 18 and 19 has been called by the New York Railroad Club and Society of Automotive Engineers to discuss the problems of a motor-driven railroad coach and to seek improved designs in motor rail transport equipment.

Speakers at the meeting will include James Paterson, managing director of Carter-Paterson, Ltd., London, Great Britain's foremost ship-building concern; H. W. Howard, transportation engineer for the General Motors Corp.; J. A. Hoffman, vice-president of the Motor Haulage Co., New York; W. L. Bean, mechanical engineer, New York, New Haven & Hartford Railroad Co., New York; J. W. Cain, manager of purchases, American Short Line Railroad Assn., Chicago; F. D. Howell, Motor Transit Co., Los Angeles; Hugh Bersie; R. E. Fielder, chief engineer of the Fifth Avenue Coach Co., New York; V. E. Keenan, superintendent of the bus division, United Electric Railways Co., Providence, R. I.; J. B. Stewart, Jr., general superintendent, Youngstown Municipal Railway Co., Youngstown, O.; and W. F. Evans, president, Detroit Motor-Bus Co., Detroit.

Not Yet A Producer

OTTAWA, CANADA, Sept. 6.—Great excitement prevailed in oil circles in western Canada last week from the statement emanating from Vancouver that Newton W. Emmens, superintendent of British Petroleums, Ltd. had stated at the annual meeting of the company that their well No. 3 in the Wainwright area had been brought in with a production of 500 bbls. daily. Later Mr. Emmens denied the statements attributed to him. The well had not been brought in as a producer as yet, he said, and it will likely be two weeks before it can be proved to be such. "There is every reason to believe, he added, that the well will have a productive capacity of 500 bbls. a day.

The well is now down 2021 feet and No. 4 well nearby is down 1850 feet. No. 3 is about one and a half miles east of No. 2 which was brought in last year with a production of 200 bbls. daily.

Keen Crude Competition Brings Premiums In Bradford Field

By Roger B. Stafford

STAFF REPRESENTATIVE

BRADFORD, PA., Sept. 6 COMPETITION of 10 buyers of crude oil from the Bradford-Allegheny oil field for an assured supply of raw material, has resulted in payment of premiums of 15 to 25 cents a barrel by all purchasers except the Joseph Seep Purchasing Agency and considerable dissension between some producers, and the Tide Water Pipe Co. and Union Pipe Line Co., the latter a Sinclair interest and running oil for the account of the Wellsville Refining Co.

The dissension arose last week over a contract offered by the Tide Water Pipe Co. to its present patrons. The Sinclair line is offering a similar contract which calls for the payment of 25 cents premium above the contracting company's highest posted price for the Bradford-Allegheny crude over a period of five years. The contract also remains in force from year to year until discontinued at the end of any year by notifying the purchasing company three years in advance. The purchasing company also must give the producer three years notice if it wishes to abrogate the contract at the end of the initial five-year period or later.

Hold Clauses Objectionable

The dissenting producers, who are said to include several of the largest in the field, point out as objectionable the clause providing for the three-year cancellation notice and the clause stipulating the premium to be above the highest posted price of the purchasing company. Producers have for years followed the posted prices of the Seep agency as basic and they look with askance on the posted prices of any other company although Tide-Water and one or two other companies have been posting their own prices, at least nominally, for several years.

They say that while they have the greatest faith in the integrity of the present personnel of the Tide Water, that present officials may not always be the governing agents, particularly if Tide Water Oil Co. should merge with another company.

The Tide Water contracts and division orders of the last nine years have contained the clause that the price paid for runs in its lines shall be at that company's highest posted price for that day. Formerly the Seep prices were used but when interstate pipe lines were declared common carriers in 1915 and ordered segregated from other branches of the oil industry, Tide Water started posting its own prices.

"In those nine years Tide Water Pipe Co. has paid for crude prices equal to and in some instances more than paid by any other purchasing agency in the field," said G. J. Hanks, general manager, in allaying the fears of the producers.

"We have more than a million dollars worth of equipment used in handling crude from this field. It would be suicidal for us to attempt something that would not give the producers as much for their oil as other buyers might. For us to post a price which with the premium would amount to less than the posted price of other large buyers, would be to junk our equipment in this field," he replied to the suggestion that his company could post a price more than 25 cents under that posted by other large buyers.

SOME readers may mistake the payment of premiums in the Bradford-Allegheny field as a general strengthening in the crude oil market. It really cannot be considered as such but results from the unusual competition of a group of refiners for the limited supply of a high grade of raw material. Two of the competitors are said to use this oil as the base for their nationally advertised lubricants. Others have used the oil as a selling argument in a distributing territory covering several states. In order to maintain the uniformity of their products, they have been endeavoring to safeguard their supply sources even by paying premiums when plenty of oil from other fields was available.
—Editor.

The five-year contract with three-year clause is the result of the loss of connections because of the increased competition for the oil. A few years ago Tide Water bought more than half of the crude produced in the field. Today it is running around 40 per cent of approximately 12,000 barrels daily production.

Its leading competitor at present is the Vacuum Oil Co. which is paying 25 cents premium for crude run to its refinery at Olean. The Vacuum also is granting 60 days' free storage. This latter fact gives the producer the advantage of holding his crude without storage charges in a rising market while in a declining market he may elect to take the price posted on the day the crude is run plus the 25 cents premium.

The Emery Manufacturing Co., Bradford, is about the third largest purchaser. It is paying a premium of 25 cents a barrel above the Seep Agency's posted price on the day the oil is run. This premium superseded the 1-cent premium the Emery company has been paying for 12 or 15 years and became effective Aug. 27, the day after the Tide Water first approached its patrons with the five-year contracts.

The Seep Agency, Kendall Refining Co., Bradford and McKean County Refining Co., Farmers Valley, are said to rank about equally in volume of purchases after Emery. Other buyers are the Wellsville Refining Co. (Sinclair), Wellsville, N. Y., United Refining Co., Warren, Bradford Oil Refining Co., Bradford, and Pennsylvania Oil Products Refining Co., Warren, with refinery at Eldred.

The Bradford and McKean County refineries have built their plants in the last two years and have cut into the crude supply of the other companies. The United entered the field when it purchased the old United States Pipe Line (Pure Oil) from Warren into the lower part of the Bradford field. The Pennsylvania Oil Products bought the U. S. line in the upper part of the Bradford field and thus extending part of its scope although the purchase was intended primarily to supplant an old line it already had in the field. The Vacuum is extending some of its gathering lines.

Some producers attribute the posting of a differential on Bradford crude over other grades of Pennsylvania crude to the entrance of the United into the field and the competition which became keener at that time. The differential at first was 15 cents a barrel posted on Feb. 1, 1923. It was gradually increased until early this year it became 50 cents. When the decline in crude oil prices started, greater reductions were made in Bradford-Allegheny grade than in the so-called lower country. On Aug. 21, this differential was further reduced to 10 cents and there were rumors that this 10 cents would have been eliminated this week if the premium offers had not changed the situation.

Most Buyers Pay Premiums

The Seep agency pays only the posted price and its runs are estimated by good students of Bradford production and where it goes as less than 10 per cent of the total. Until now the prevailing premiums have been 15 and 20 cents which the smaller purchasers have been giving their contract connections. These buyers have not yet announced whether they intend to offer the same sized premium as the Emery, Tide Water and Wellsville.

Another tender spot in the Bradford situation is that of lead lines. In years past, purchasing companies have furnished lead lines to producers. When the depression of 1921 came the practice was generally discontinued but producers were paid 8 cents per barrel lead line compensation. Tide-Water discontinued this compensation early last year. Emery continued it until it posted the 25-cent premium, when the compensa-

(Continued on page 41)

Active Convention Booth Market Reported By N. P. M. A.

CHICAGO, Sept. 8

AT THE last count 30 booths remained to be sold for the fall convention of the National Petrolem Marketers' Association in Cleveland Nov. 18, 19 and 20. All expensive locations have been taken, leaving only $250 positions open. More booths have been retained already than have ever been sold at any previous convention, and reservations were still being made at the close of business Saturday noon.

There has been no concerted selling campaign staged to dispose of exhibit spaces. Fully half of the exhibitors are those who exhibit consistently at jobbers' meetings. As far as the exhibition itself goes, this one bids fair to be more of an oil show than those immediately foregoing, for there are five oil companies on the list of exhibitors.

The comparatively small cost of spaces this time has stimulated the sale of extra spaces to large companies, and quite a number took two booths and a few three. Miss Eva Arnstein, who has charge of the sale of spaces, is striving to get as large a representation of equipment companies as has ever been assembled on the exhibit floor of any previous jobbers' meeting.

The list of exhibitors who have reserved spaces up to the present writing, contains 48 names as follows:

American Can Co., Chicago, Ill.
American Oil Pump & Tank Co., (The) Cincinnati, O.
Beacon Equipment Co., (The) Hamilton, O.
Bennett Injector Co., (The) Muskegon, Mich.
Bowser & Co., Inc., S. F., Fort Wayne, Ind.
Calumet Refining Co., Chicago, Ill.
Canfield Oil Co., Cleveland, O.
Chicago Tubing & Braiding Co., Chicago, Ill.
Columbian Steel Tank Co., Kansas City, Mo.
Curtis Pneumatic Machinery Co., St. Louis, Mo.
Dawes Electric Sign & Mfg. Co., Pittsburgh, Pa.
Dayton Pump & Mfg. Co., Dayton, O.
Fiske Brothers Refining Co., New York City.
Fleckenstein Visible Gasometer Co., Grand Rapids, Mich.
Folsom Iron Works, Walkerton, Ind.
Glibert & Barker Mfg. Co., Springfield, Mass.
Graver Corp., East Chicago, Ind.
Guarantee Liquid Measure Co., Rochester, Pa.
Heil Co. (The) Milwaukee, Wis.
International Metal Hose Co., Cleveland, O.
Kew Ideal Pump & Mfg. Co., St. Louis, Mo.
Leader Iron Works, Decatur, Ill.
Marland Refining Co., Ponca City, Okla.
Marvel Equipment Co., Cleveland, O.
Metal Hose & Tubing Co., Brooklyn, N. Y.
Midland Specialties Co., Chicago, Ill.
Miller Petroleum Co., Kansas City, Mo.
Milwaukee Tank Works, Milwaukee, Wis.
Morrison Brothers, Dubuque, Ia.
McDonald Manufacturing Co., A. Y., Dubuque, Ia.
McSavaney Co. (The) Springfield, O.
National Gasoline Hose Co., Brooklyn, N. Y.
National Recording Pump Co., Dayton, O.
Nell & Co., William, Chicago, Ill.
Radiant Oil Co., Lima, O.
Royer Pump & Equipment Co., St. Louis, Mo.
Shotwell Pump & Tank Co., Boston, Mass.
Springfield Visible Pump Co., Springfield, Tenn.
St. Louis Pump & Equipment Co., St. Louis, Mo.
St. Louis Tin & Sheet Metal Wkg. Co., St. Louis, Mo.
Tokheim Co. (The) Cedar Rapids, Ia.
Tokheim Oil Tank & Pump Co., Fort Wayne, Ind.
United Metal Hose Co., New York City.
United States Air Compressor Co., Cleveland, O.
Wall Pump & Compressor Co., Quincy, Ill.
Wayne Tank & Pump Co., Fort Wayne, Ind.
Winslow Boiler & Engineering Co., Chicago, Ill.
Wisconsin Pump & Manufacturing Co., Madison, Wis.

The election feature of the Cleveland convention is to carry unusual interest this time. It is probable that 26 directors will be chosen including three vice presidents. This does not contemplate the election of the president, which also is due this year, and possibly other officials, such as members of executive committee, and subordinate committee heads.

At the meeting in St. Louis last spring it was voted to raise the number of directors from 30 to 48, the idea being to have one director from every state in the union if possible. That action calls for 18 new directors, of which only two have been chosen since that time, J. M. Wolf, Southern Minnesota Oil Co. Fairmont, Minn., and J. C. Richdale, Jr., Richdale Oil Corp., Boston, Mass.

According to the old plan of 30 directors, ten were elected each year to serve three years and the terms of ten directors expire this year. Incidentally those ten include the names of every vice president the association has; S. S. Cramer, Wadhams Oil Co., Milwaukee, Wis., 1st vice president; R. E. Gerkins, Gerkins Oil Co., Dayton, O., 2nd vice president; and J. L. Murray, Corn Belt Oil Co., Bloomington, Ill., 3rd vice president. All have served three years and their terms expire.

Other directors whose terms expire are: A. H. Caward, Hawkeye Oil Co., Waterloo, Ia.; E. H. Hilpp, Louisville, Ky.; W. O. Hudson, Marine Oil Co., New Orleans, La.; E. J. Keitel, Columbia Oil Co., St. Louis, Mo.; C. L. Maguire, Northland Oil Co., Chicago, Ill.; H. E. Mills, C. E. Mills Oil Co., Syracuse, N. Y.; and Jack Nourse, Nourse Oil Co., Kansas City, Mo. Not all of these directors have served three years, some having been elected more recently to fill unexpired terms.

Say Navy Is Neglected While Rum Fleet Is Endowed

By Special Correspondent

WASHINGTON, Sept. 9.—Navy officers, responsible under their oaths for keeping the navy in suitable condition and strength for the protection of the country, within the week have begun allowing the public to know what they think is an extremely dangerous condition.

The oil industry is interested in the matter for the reason that if the complaint is well founded the fact means putting off the day when the navy of the United States will be in first class shape by being exclusively an oil burning navy.

The Washington Post, treating the complaint of the navy officers in a sympathetic way, gives the gist of the complaint in a declaration that, "the United States navy is rapidly deteriorating into a junk heap, while approximately $20,000,000 is being expended on the coast guard rum fleet.

"The battleship Florida, one of the 18 major ships allowed the United States under the arms conference treaties of 1921, has been laid up in the Boston navy yard, its crew reduced from 1000 to 200 men.

"All oil-burning ships have been transferred to the Pacific fleet because of the cheaper cost of oil on the west coast, while all coal-burning ships have been assigned to the Atlantic fleet because coal is cheaper on the eastern seaboard."

The immediate cause of this publicity concerning the feelings of navy officers is the reported slashing of navy estimates, by the bureau of the budget, by about 16 per cent, $56,000,000 being reported as the sum that bureau has cut from the navy's estimates of $346,000,000.

It is contended that the Florida, instead of being laid up, should have been sent to a yard to be re-boilered and converted from a coal burner to an oil burner. All the coal burning ships are comparatively old, having been placed in commission between 1911 and 1914. Some of them, however, are still good fighting types and they have been marked for conversion to oil burners.

The program calls for conversion at the time the boilers are due for re-placement, as in the case of the Florida. The boilers of all the coal burning capital ships are on the point of being marked as unfit for further use.

The Florida was taken out of the active fleet because it was considered unsafe to undertake to keep that ship in service under the conditions that are

Make Boyce Libel Suit A Showdown

BOYCE'S libel suit for a million dollars against President Nicholas and the Marketers association, should be welcomed by everyone because it should result in an early and definite public determination of the value of Boyce-ite.

The whole oil industry, the automobile industry, automobile clubs and public officials should aid in bringing about this public determination. These other interests, of course, are not and cannot be parties to the libel suit. But as the question of any gasoline dope can be such a big public question and concern so many millions of dollars of the public's money, it is proper that these other interests should use every effort at their command for a thorough and accurate investigation of this gasoline dope, and any others that may be looming prominently on the horizon.

Regardless of whatever technicalities Boyce may plead in his petition, or Nicholas could make in reply, Boyce's suit should be considered a challenge for a show down. Mr. Nicholas can very properly take the position that this suit shows the importance of the subject; that if Mr. Boyce considers that an adverse criticism of his product can do him a million dollars of damage—which in this case would mean that Boyce expected profits—then enough millions are involved for the motorists of to show that he has been deprived of a million dollars in net this country to justify Nicholas in calling on all interested agencies to aid in a real finding of fact as to just what, if any, of Mr. Boyce's claims can be supported.

Without having reference in the following for the moment to Boyce-ite—all the above mentioned interests should recognize that the public is practically helpless in passing on the merits of some features of motor fuels. By the aid of suggestion a good part of the public can be made to believe in most anything as regards a fuel. For example, an eastern oil jobber reported to us that the other week he presented to a friend six cans of what he told the friend was Boyce-ite. The friend had been using Boyce-ite for some time and urging on the oil jobber its advantages. The friend made a long tour, used up the six cans and on his return reported that the motor never ran better, never had more power and pep, etc., etc. The oil jobber then told him the good conduct of the motor was all in his mind, that the six cans contained plain kerosene. This story is not offered as a knock on Boyce-ite, or any other fuel, because it is not a criterion as the individual motorist is not qualified to judge. But the story does show how poor his judgment can be.

In view of this we believe it is absolutely necessary for the above named agencies to keep a close eye on all that pertains to motor fuels and where fraud may be suspected, data should be gathered and submitted to the proper governmental authorities. This should be done promptly on the appearance of any special dope on the market.

The various oil associations, the Society of Automotive Engineers, the National Automobile Chamber of Commerce and the automobile clubs of the country should work together to arrange for this policing, as it were. The automotive engineers and the oil industry could well make preliminary checks of the various products offered. The United States Bureau of Standards and the Bureau of Mines too, probably could assist, or make the final check, and then if there is reasonable doubt as to the value of the product the data should be presented to the department of justice at Washington, and possibly to various state attorneys general for their consideration and action.

In the case of fraud immediate criminal action should be begun against every one who has had anything to do with the fraud, yes, even the newspapers and magazines publishing the advertisements, and those who write the advertisements. This last has not been done but eminent lawyers say it can be done. If publications and advertising writers were joined in a few fraud suits they would be much more careful as to what advertising they wrote or accepted.

In view of the discussion on Boyce-ite and of Mr. Boyce's challenge, all these interests should bend their energies immediately for a thorough investigation of Boyce-ite.

The real issue that concerns the public is not whether Boyce-ite has or has not a certain ingredient in it but whether it does for the motorists all that is claimed for it. Every one should lend a hand to have this issue determined and Mr. Boyce should be first to urge it.—W. C. P.

considered essential. It was said to be unsafe to fire the Florida heavily enough to enable her to keep up with other ships with which she was assigned to duty. Colliers and supply ships, not so conspicuous as the Florida, have also been laid up because there was not money enough to pay for the change from coal to oil.

While the saving of money resulting from the use of oil as fuel is one of the considerations that caused oil burners to be sent to the Pacific fleet, it is not the primary one. The primary one was to have the fastest ships in the ocean where there was more probability of use.

In 1921 there was a prospect of trouble so great that the Doheny contract that is now part of the "scandal" that is being exploited for political purpose was made, the navy then having no source of oil supply nearer the scene of the prospective trouble than the oil ports on the main land.

Another consideration was a respect for logic. It is idiotic to have coal burners and oil burners in the same organization.

This complaint on the part of the navy against the use of $20,000,000 or more for the rum navy is not an anti-prohibition argument, although the upbuilding of the coast guard navy, part of which constitutes the rum navy, has never been pleasing to naval officers.

They hold the idea that there should be only one navy and anything they can do to minimize the coast guard navy, as they figure it, will result in more for the regular oil-burning navy.

NEW YORK, Sept. 9.—A book on the "Extraction of Gasoline from Natural Gas" by Col. G. A. Burrell is now being printed under the auspices of the American Chemical Society. Mr. Burrell was for many years connected with the Bureau of Mines and in an official capacity with several large oil companies. He is now engaged in business for himself doing consulting work, and is also secretary of the petroleum division of the American Chemical Society.

This book, which will comprise 600 pages, is one of a series of scientific and technical books being put out by the society.

CHICAGO, Sept. 9.—The Link-Belt Co. announces that it will again display at its usual two spaces at the International Petroleum Exposition at Tulsa its Link-Belt SS 40 and SS 124, together with pictures and literature. A novel way of attracting attention at the company's booth is promised by Mr. Markey, well known to oil well supply men, and who will have charge of the company's exhibit.

CHICAGO, Sept. 9.—Announcement has been made of the appointment of Rushmore B. Heed as vice president in charge of sales for the Garford Motor Truck Co., Lima, O.

Mr. Heed, who is well known in the motor truck industry, has been associated in the past with several motor truck companies among them being the Republic, Diamond T, and Mack Motor Truck companies. His duties with the Garford began on Sept. 1.

Lubricating Oil Tests; How To Make Them; What They Mean

By H. L. Kauffman
Petroleum Chemist

Article 1

Introductory. Gravity Conversion Method. History Of Baume Scale. Flash And Fire Tests And Methods

IT IS the purpose of these articles to outline briefly the tests usually made in examining a lubricating oil; to mention in the simplest possible terms such hydrocarbon chemistry as will make clear the reason for the formation of carbon deposits; to enter into a more detailed discussion of the carbon residue test, showing why it is important and how such tests are made; and to illustrate by typical analyses the part played by the carbon residue test in assisting in the determination of the quality of an oil.

When a sample of lubricating oil is received in a laboratory for examination the tests usually made on the oil are gravity, flash, fire, viscosity either at 100°F. or 210°F., color, pour or cold test, carbon residue and emulsion test. Other tests that are made less frequently are the evaporation test, the ash test and a determination of the acidity or alkalinity of the oil under examination.

Inches vs. Millimeters

THIS is the first of three articles in which Mr. Kauffman, a recognized petroleum chemist, discusses the various tests applied to lubricating oils. He tells what the most important tests are, how they are made and what they show as to the quality of the oil and its suitability for certain purposes.

The articles are written in plain, easily understood English and dimensions and specifications are given in inches. While the chemists and technical men of the industry, of course, are used to dealing with metric measurements, millimeters, centigrams and so forth, there are many of the smaller jobbing companies whose business does not warrant their employing chemists.

Yet their laboratory tests must be made and men without special technical training are much more used to thinking and measuring in inches than in centimeters. The only exception to this is in the case of laboratory flasks and retorts which are made in 60-100 and 1000-cubic centimeter sizes. A "60 cc flask" is understood by everybody who ever worked in a laboratory at all.

This article contains the introduction to the series, method of making gravity determinations with an interesting history of the development of the Baume and A. P. I. scales, and a simple formula for converting specific gravity into its equivalent on the two scales. Also the flash and fire test, method of making them and what gravity and flash and fire show as to the quality of an oil.

Gravity

The specific gravity of an oil is the weight or density of a given volume of oil as compared with the weight of the same volume of pure water at 60 degrees F. A hydrometer is the instrument most frequently used in determining the gravity of oils. Briefly, the hydrometer may be described as consisting of a tube graduated into equal parts, below which is an elongated bulb containing air, while at the bottom of this is a smaller bulb which is weighted with fine shot or mercury to give the instrument the necessary weight.

A hydrometer graduated in a scale known as the Baumé scale was until recently the instrument in general use in the oil industry. This scale was first published by Antoine Baumé in 1768. The graduations on this scale were originally made as follows:

The point on the stem to which the hydrometer sank in distilled water at 60°F. was marked 10° on the scale. The instrument was then placed in a solution of 10 per cent salt and 90 per cent water by weight, and the point on the stem at the surface of the mixture was marked zero. The distance between the two markings was divided into 10 equal parts or degrees, and graduations of exactly the same size extended up the stem as far as 50°. The scale was later extended up to 100°.

Now, however, the graduations are made by determining the specific gravity of a solution and then converting the specific gravity to Baumé gravity by the following formula, based on using a modulus of 140:

$$\text{Degrees Baumé} = \frac{140}{\text{Sp. gv. } 60°/60°\text{F.}} - 130$$

$$\text{or specific gravity, } 60°/60°\text{F.} = \frac{140}{130 + \text{degrees Bé.}}$$

Two points on the stem of the hydrometer must be determined and the distance between these points can then be divided into degrees.

At the present time the standard hydrometer for the oil industry is one adopted by the American Petroleum Institute and is merely a variation from the standard Baumé scale for liquids lighter than water. It is based on the use of a modulus of 141.5, and bears the following relation to true specific gravity.

$$\text{Degrees A. P. I.} = \frac{141.5}{\text{Sp. gv. } 60°/60°\text{F.}} - 131.5$$

The difference between the two scales varies from one-tenth of a degree on readings on the scale between 10° and 20° to eight-tenths of a degree on readings between 80° and 90°. At 60° there is a difference of five-tenths of a degree between the two scales, in all cases the A. P. I. reading being the higher.

All gravity taken in testing oils are corrected back to the gravity of the oil at 60°F. For this reason the temperature also must be noted at the time the reading on the hydrometer is taken and a correction then made for the variation in temperature.

Specially prepared tables are usually used to make this correction. Approximately, however, it is a safe rule to allow one per cent of correction for each 15° of variation in temperature for gasoline; one per cent for each 20° of temperature variation for kerosene; and one per cent for each 25° of variation for gas oil and lubricating oils.

The gravity test is of no importance to the consumer of lubricating oils except that it is an indication of the nature of the crude from which the oil was made. The paraffin base crudes produce lubricating oils that are light in gravity; those from the Pennsylvania crudes range from 26° to above 30°. On the heavier gravity, low cold test oils from Gulf coastal and California crudes the gravities range from 18° to 22°. While on the majority of lubricating oils made from Mid-Continent crudes the gravity will vary from 22° to 26°.

Knowing the gravity of a lubricating oil it is possible to locate with a reasonable degree of accuracy the source from which the oil came. In the refining operation the gravity test is an important factor in controlling the distillation process.

Flash and Fire

If any liquid is heated sufficiently, vapors will be given off. This is true in the case of oil, but in this instance the vapors are inflammable. Upon this fact are based the flash and fire test,

MATHIESON
HYPOCHLORITE PROCESS
For Refining Gasoline and Kerosene

THE Mathieson Hypochlorite Process has marked an important advance in oil refining methods and is now in successful operation in a number of refineries throughout the United States.

The demonstrated advantages of our process over the acid-alkali treatment include greater stability of color and odor of distillate, lower refining cost, reduction of chemical treatment losses and elimination of acid sludge troubles.

The Hypochlorite of Lime solution is made at the refiner's plant from *Liquid Chlorine* and *replaces sulphuric acid* as the refining agent. Shipments of Liquid Chlorine are made from Niagara Falls or from our warehouse stocks at centrally located distributing points. We are the largest producers of Liquid Chlorine in the world.

We cordially invite our friends to visit us at the International Petroleum Exposition, Tulsa, Okla., October 2-11, 1924. Our booth will be No. 66, in the West Virginia Building.

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which is an important test to the refiner as a control test but of lesser importance, in most cases, to the user of lubricating oils.

The flash test, or flash point as it is also frequently called, is the lowest temperature at which, under definite specific conditions, a petroleum product vaporizes quickly enough to form above its surface an air-vapor mixture which gives a flash when ignited by a small flame.

The fire test, or burning point, is the lowest temperature at which, under definite specified conditions, a petroleum product vaporizes quickly enough to form above its surface an air-vapor mixture which burns continuously for at least five seconds when ignited by a small flame.

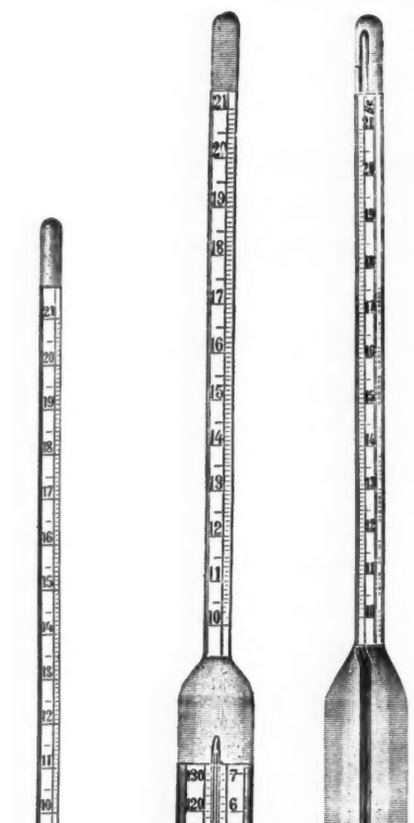


Fig. 1 Fig. 2 Fig. 3

Fig. 1—Plain Hydrometer
Fig. 2—Hydrometer combined with Thermometer at bottom
Fig. 3—Hydrometer combined with Thermometer at top

Flash and fire tests on lubricating oils are taken in the Cleveland open cup. This is a round brass cup having a flange around the outside at the top. The cup has an inside diameter of 2½ inches and is 1 5/16 inches deep. On the inside of the cup a filling mark is indicated ⅜ inches from the top. The cup is supported by a tripod having on it a plate in which is cut a hole for holding the cup.

In making the test, the clean, dry cup is filled to the mark with the oil to be tested and the thermometer properly suspended in a vertical position so that the bottom of the thermometer bulb is exactly ¼ inch from the bottom of the cup and approximately half way between the back and the center of the cup. Heat is applied by means of a gas burner under the center of the cup in such a way that the temperature of the oil rises at the rate of 9° to 11° per minute.

A test flame burner carrying a bead of flame not more than 5/32 and not less than ⅛ inch in diameter is passed over the surface of the oil at each successive thermometer reading which is a multiple of 5°F. In doing this one must be sure to move the flame across the center of the cup in a straight line at a right angle to the diameter of the cup passing through the thermometer; to keep the lower side of the test flame exactly level with the upper edge of the cup; to make the sweep across the cup in one second; and to avoid breathing in the direction of the cup.

The temperature reading on the thermometer when a flash appears at any point on the surface of the oil is noted as the "Flash, Cleveland open cup". The heating is then continued without interruption, at the same rate as before and the test flame applied in exactly the same manner as above described at each thermometer reading which is a multiple of 5°F. The temperature at which the oil ignites and continues to burn for at least five seconds is noted as the "Fire, Cleveland open cup".

As previously has been mentioned, the flash and fire tests are important to the manufacturer of lubricating oils as a control test in the refining operation. These tests are also an assistance in identifying the source of a lubricating oil. For example, a light motor oil having a viscosity of 200 seconds, at 100°F. if made from Pennsylvania crude oil would have a flash of approximately 420° F.; if made from Mid-Continent crude the flash would be about 400°F., while if made from Gulf-coastal crudes the flash would be approximately 340° F.

There is no definite relation between the flash point of an oil and its lubricating value. The flash test, however, is an indication although not a measure of the volatility of an oil. Furthermore, knowing the flash point of an oil and the temperatures under which it must lubricate is an aid, and frequently a necessity, in order that efficient lubrication may be obtained in the various services required of an oil, without the production of oil vapors or burning up of the oil, before the work of lubrication is completed.

Fig. 2—A late model of the Cleveland open cup. Cost $13

New Chemical Co. Acquires Buffalo Research Plant

BUFFALO, N. Y., Sept. 15.—The Chemical & Vacuum Machinery Co., Inc., has been incorporated to acquire the patents and all development of the research plant established by E. G. Rippel and his associate, Charles O. Lavett, and to market a modern and improved line of apparatus for the manufacture of chemicals, electro-chemical products, dyes, pharmaceuticals, food and food by-products recovery apparatus, explosives, acids, extracts, etc.

Officers are: Mr. Rippel, formerly associated with the Buffalo Foundry & Machine Co., president; John Casa Eguia, vice-presdent; William Schoellkopf, secretary-treasurer; and Mr. Lavett, previously engineer in charge of tests and field erection with the Buffalo Foundry & Machine Co., manager. Directors are: J. F. Schoellkopf, Jr., William Schoellkopf, Mr. Eguia, Mr. Lavett and Mr. Rippel.

The company has just been appointed exclusive American representative for De Dietrich & Cie., France, manufacturer of cast iron and steel enameled apparatus for the chemical food products and allied industries.

OIL FIELD SUPPLY TRADE NEWS

Pipe Line, Tank Construction And Plant Expansion Planned

By Special Correspondent

PITTSBURGH, Sept. 9

PLACING of the 365-mile line of 10-inch pipe by the International Petroleum Co. (the Andean Corp.) is expected by the trade here within a week. This will involve between 40,000 and 45,000 tons. Surveys in Venezuela where the line is to be installed have been completed.

Another pending order is that of the Oklahoma Pipe Line Co., subsidiary of the Standard Oil Co. of New Jersey, 26 Broadway, New York, for 7500 tons of 8-inch pipe for about 100 miles.

A domestic oil company is in the market for 70 miles of 6-inch pipe for southwestern oil territory—involving 3700 tons. The Plains Pipe Line Co., Wichita Falls, Tex., recently was chartered with a capital of $100,000 by W. W. Silk and F. P. Chidsey to build pipe lines in the Amarillo, Tex., field. W. M. Priddy is president.

The Prairie Pipe Line Co., Independence, Kan., will construct an 8-inch line from the new Moffat field in northern Colorado to the Producers & Refiners Corp., refinery at Parco, Wyo., a distance of about 100 miles. At least two pumping stations will be built. George Coyle, Exchange National Bank building, Tusa, is general superintendent.

The Crusader Oil Co., El Dorado, Ark., is understood to be constructing a pipe line with pumping and booster stations from Norphlet, Ark., to Destrehan, La., about 300 miles. W. R. Davis, 1025 East Eighteenth st., Tulsa, is president of the company which recently acquired the property of the Arkansas Pipe Line & Navigation Co.

Plans are under way by the Los Angeles-Midway Pipe Line Co., Los Angeles, for the construction of a pipe line to connect the refining plant of the parent company (the Pan-American Petroleum Co., Los Angeles) with the Elk Hills oil fields, Kern county, about 145 miles. It will cost about $2,500,000 with pumping stations. E. L. Doheny Jr., heads the new company. Another smaller prospective line is that of the Pure Oil Pipe Line Co., a subsidiary of the Pure Oil Co., Columbus, O., and Fort Worth, Tex., from Huffman Station to the storage plant of the Galena Signal Oil Co., of Texas, Humble, Tex., seven miles. The National Tube Co., here, the pipe subsidiary of the United States Steel Corp., recently took an order for 38 miles of 14-inch plain end pipe, about 3500 tons, for a gas line in Louisiana.

Exports of casing and line pipe for July this year totalled 5670 tons as compared with 5010 tons for July, 1923. For the eight months ended July 31 this year the total shipped abroad from this country was 64,700 tons as against 32,210 tons for the same period last year.

Pipe prices generally are holding firmly to the levels represented by card discounts of April, 1923, although some jobbers recently have been sacrificing their own profit and offering concessions in order to stimulate buying.

The plate market has been fairly active for oil storage tank work, although numerous larger projects still are pending. The Pan American Petroleum Corp., Los Angeles, took bids on six 55,000-barrel and 10 37,500-barrel tanks, involving 2500 tons of plates and 500 tons of shapes, but so far has placed only a few small tanks involving 300 tons with the Llewellyn Iron Works, Los Angeles. The Gulf Refining Co. has ordered high pressure stills from the Henry Vogt Machine Co., Louisville, Ky., involving 1400 tons of plates. The Pure Oil Co., placed tanks recently involving 5000 tons, the plates to be rolled by Chicago steel producers, and also bought three oil tanks involving 200 tons from the Warren City Tank and Boiler Co., Warren, O.

The Standard Oil Co., of Indiana still has an inquiry out for 40 low pressure stills involving 800 tons; the New England Oil Refining Co., recently put out an inquiry in the east for tanks involving 4000 tons and the Magnolia Petroleum Co., Houston, Tex., wants tank roofs taking 1300 tons.

The Tri-State Refining Co., Huntington, W. Va., placed six 8050-gallon tank cars with the Standard Tank Car Co., which car builder also took an order for 16 tank cars from the National Refining Co., Cleveland, although the underframes of the latter are to be built in the National company's own shops. The Barnsdall Refining Co. has ordered 70 tank cars from the Pennsylvania Tank Car Co., each of these orders will require sizable plate tonnages.

Prices of tank plates have grown more attractive, since levels below 2.00 cents a pound, base Pittsburgh, have appeared. The market here is quotable at 1.90 cents to 2.00 cents, although in the east as low as 1.75 cents has appeared.

Tin plate remains firm at $5.50 per base box, Pittsburgh, 100 pounds, although on export tin plate some attractive figures are made to compete with foreign makers. Iwai & Co., and Mitsui & Co., New York houses, recently shared in an order for 56,000 base boxes placed by the Nippon Oil Co., of Japan and one of these lots was awarded the American Sheet & Tin Plate Co.

Another New York Japanese exporting house closed on 1000 base boxes and about 40,000 base boxes still are pending. The Ogura Oil Co. recently bought 10,000 base boxes from a prominent manufacturer in this country. Among the domestic oil companies recently placing tin plate orders is The Texas Co., which is distributing orders for 100,000 base boxes.

Structural material continues to be bought from time to time by oil companies and structural shapes continue to be quoted at 2.00 cents to 2.10 cents a pound, Pittsburgh, being somewhat stronger than tank plates. The Standard Oil Co., of New York is taking bids on the general contract for a warehouse at Greenfield, Mass.

The Standard Oil Co., of New Jersey recently awarded the contract for a boiler house at Jersey City, involving 1200 tons to the McClintic-Marshall Co., Pittsburgh, and for this plant, its Eagle Works, purchased a 25-ton locomotive crane from the American Hoist & Derrick Co.

The Standard Oil Co., of Indiana is taking bids on buildings at Whiting, Ind., requiring 670 tons of shapes.

The Standard Oil Co., of New York recently awarded contracts to the Equity Construction Co., 25 West Forty-third st., New York for a 1-story 30 x 40-foot warehouse, garage and repair shop.

A similar building is to be erected by the Tidewater Oil Sales Co. Forty-ninth st. and Grays Ferry Road, Philadelphia.

The General Petroleum Co., Seattle, Wash., plans three buildings at its Harbor Island terminal, a machine shop a locker building and a pump house all to be of sheet metal construction.

The Fortuna Oil Co., Shreveport, La., is in the market for engine and compressor equipment for a pumping station near Bethany, Tex.

The Wilson-Snyder Manufacturing Co., Pittsburgh, was awarded an order from the Pan American Petroleum Co.,

This Warford equipped Ford truck stood in the public square at Henderson, Texas where it attracted hundreds of people from all parts of the Lone Star State. The actual load weight on the scales was17,255 lbs. Weight shown on the poster, 15,915 lbs., was estimated from the footage.

Write the Distributor Nearest to You

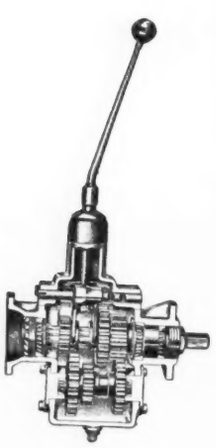
Canadian Warford Ltd. - Windsor, Ont.
Dealers' Warford Co. - Memphis, Tenn.
George Dietrich - - Spokane, Wash.
Dine-DeWees Co. - Canton, Ohio
Dyke Motor Supply Co. Pittsburgh, Pa.
Foster-Warford Co. - Auburn, N. Y.
Hall-Warford Co. - Charlotte, N. C.
Houdaille-Polk Co. - Dallas, Texas
E. W. Jay - - - Vancouver, B. C.
Kenney Equipment Co., Indianapolis, Ind.
H. N. Knight Supply Co. Oklahoma City, Okla.
McGee-White Corporation Minneapolis, Minn.
Massachusetts Warford Co. Haverhill, Mass.
Motive Parts Corporation, New York City
Motor Specialties Co. - Denver, Colo.
Price Auto Service Co. - Wichita, Kan.
Noble C. Gifford - - Phoenix, Ariz.
Sieg Company - - Davenport, Iowa
Sieg-Warford Co. - Chicago, Ill.
Transmission Sales Co., Stockbridge, Mich.
Wade and Dunton Motors Inc. Lewiston, Me.
Warford-Eastern Co., Philadelphia, Pa.
Warford-Equipment Co., Seattle, Wash.
Warford-Pacific Co., San Francisco, Cal.
Warford-Sales Co., - Atlanta, Ga.
Warford-Sales Co. of S. Carolina Columbia, S. C.
Warford-Western Co., Kansas City, Mo.
Hammel-Gerke Company Los Angeles, Cal.
Wholesale Auto Supply House Tampa, Fla.
Woodward Sales Co. Portland, Ore.

The Heavy Truck Needs a New Alibi

You wouldn't expect to haul eight and one-half tons with a Ford truck as a regular practice, but it is worth something to know that your Ford could do it.

Every day, Warford, the Two-Ton Transmission for Ford trucks, is shattering that carefully built up tradition of the heavy truck makers—that a motor truck must weigh as much as the load it hauls.

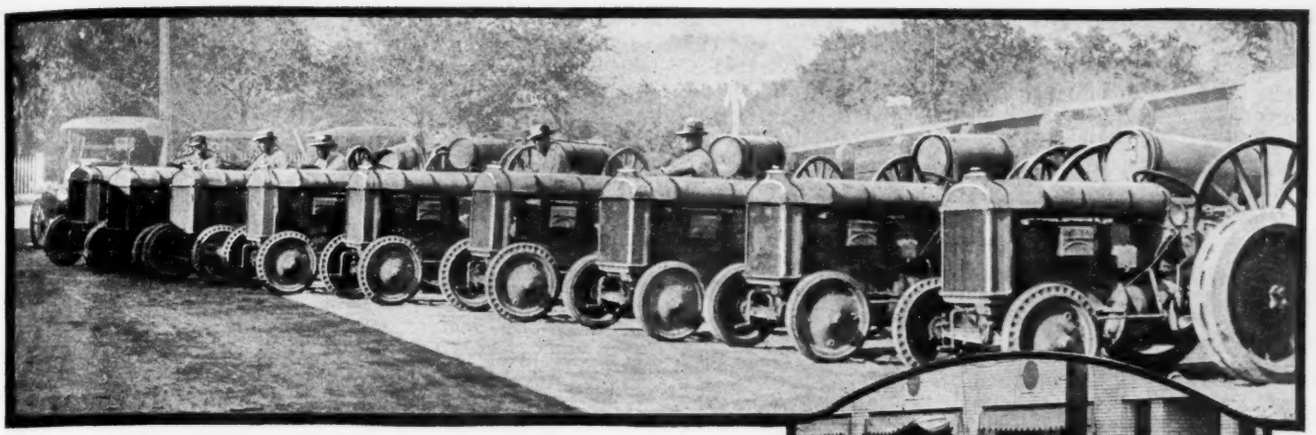
Thirty thousand Warford users know this assertion is false. They know that a 200 pound man can sit in comfort and safety in a 20 pound chair. They know that the Warford equipped Ford truck will give the same performance as any standard two-ton or speed truck at one-third the first cost and with Ford one-ton operating economy.



"A Speed for Every Need."

Warford
AUXILIARY TRANSMISSION

The Warford Corporation · 44 Whitehall Street, New York City



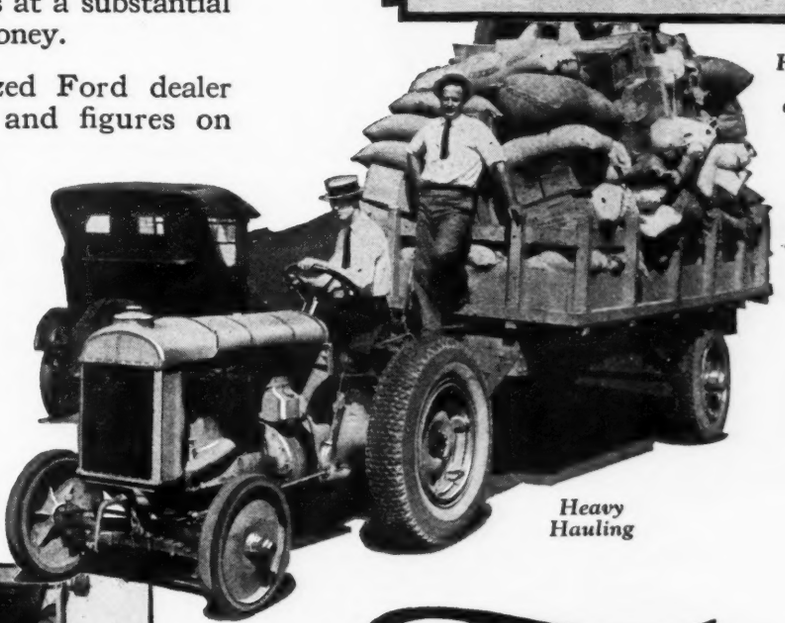
Municipal Use—Street Cleaning

Ford Products For Every Business

Ford Transportation—Passenger Car and Truck—and Fordson Power can be applied to your business at a substantial saving in time, labor, money.

Your nearest Authorized Ford dealer has up-to-date facts and figures on the cost of operating these dependable units in your business. He will gladly show them to you and at the same time arrange to give you a practical demonstration, any time, any place you name.

House to house delivery



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Construction Work

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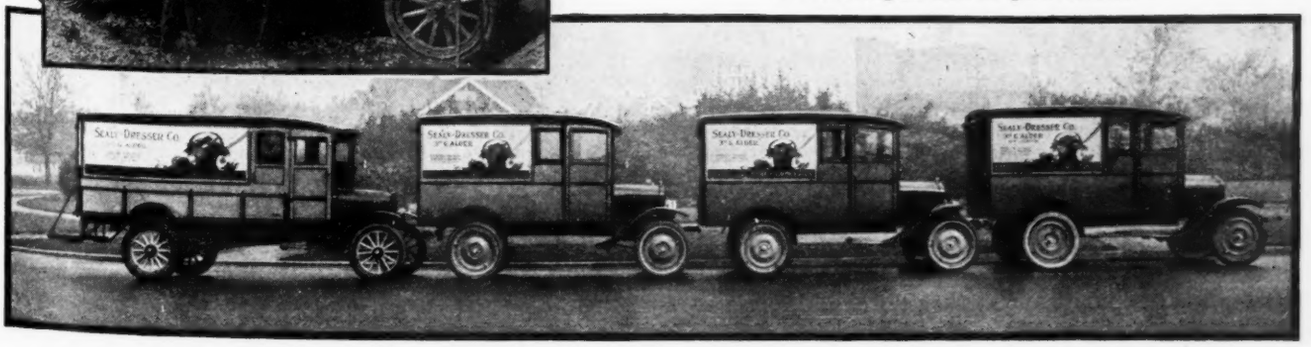
CARS - TRUCKS - TRACTORS

Advertising as well as quick service



Los Angeles, for 10 pipe line pumps for its California field. Each pump is to have a capacity of 15,000 barrels per day against 750 pounds per square inch line pressure and is to be driven by a 300 horsepower Diesel engine.

The Livingston Oil Corp., refinery at Walters, Okla., is being dismantled. Part of the machinery and equipment is being moved to the Lorraine Petroleum Corp., Bristow, Okla., for expansion purposes. The Lorraine corporation recently purchased the Livingston properties.

Permission has been granted the Associated Oil Co. San Francisco, by the board of city trustees, Auburn, Cal., for the construction of a new storage and distributing plant to cost $100,000 with equipment.

With equipment, the 1-story machine shop and automobile service and garage building erected by the Standard Oil Co. of Indiana, at Bond and Voris streets, Peoria, Ill., will cost $55,000. J. R. Coleman is district manager.

A $300,000 oil refinery at Southampton, Ont., is planned by the Mulberry Creek Oil Co., J. H. Cook, Lions Head, Ont. It also will build a pipe line from the oil wells in Eastnor township to Southampton.

The Mid-Continent Oil Leasing Co., Oklahoma City, is understood to have started construction of a gas compressor and booster plant on its site acquired recently near Duncan, Okla., by installing two 80-horsepower compressor engines with auxiliary equipment. Contracts for equipment are being placed and a pipe line also will be installed.

A new lubricating oil plant is contemplated by the Roxana Petroleum Corp., Arcade building, St. Louis, at Roxana, near Wood River, Ill., to be operated in connection with its present refinery. Thomas F. Lydon is president.

The Gulf Refining Co., Pittsburgh, has under consideration the expenditure of about $450,000 for the erection of an addition to its refineries and gasoline plants in Texas and the installation of additional machinery. H. J. Kelley is company engineer.

Tentative plans have been formulated by the American Oil Co., American building, Baltimore, for a one and 2-story oil storage and distributing plant at Wilmington, Del. to cost $75,000 with equipment. Louis Blaustein is president.

Title to property at Elkton, Md., recently was taken by the Standard Oil Co., of New Jersey, which will be used for a storage and distributing plant. A wharf will be built at Welch Point in the same vicinity and a pipe line constructed to the new plant. The entire project will cost about $85,000.

The Pierce Petroleum Corp., 111 Broadway, New York, formerly known as the Pierce Oil Corp., will remodel its Sand Springs, Okla., refinery and install additional machinery. William H. Coverdale is chairman of the board.

The Standard Oil Co., of New York, is about to build a bridge connecting Grand Island with the mainland just north of Buffalo. The bridge will span the Niagara river north of the new contemplated New York Central railroad bridge. The Standard will erect a refinery on the island with a storage capacity of more than 5,000,000 gallons of gasoline. The company owns approximately 300 acres on the east side of Grand Island and the river will be deepened to permit of the Standard Oil Co.'s boats to dock.

The Stroud Gasoline Co., Stroud, Okla., recently took over a gasoline plant there and is making some enlargements and also is installing new equipment. E. B. Huston and H. L. Sullivan head the company.

The Tulsa Tool Co., has been incorporated at Tulsa, Okla., by D. M. Brown, Ellis Green and Arthur Lippa, 243 West Sixteenth st. to manufacture and deal in oil field tools.

The GasTite Device Co., Pawhuska, Okla., recently incorporated for $50,000. J. J. Quarles, W. H. Aaron and F. H. Boyd will manufacture mechanial devices for making oil tanks gas tight.

The Bellman Manufacturing Co. Okmulgee, Okla., was organized with a capital of $25,000 to erect a plant for the manufacture of oil well specialties. John Bellman, 600 North Bryan st. is president.

The Panhandle Petroleum Products Co., Burgettstown, Pa., will reconstruct its building recently damaged by fire.

The Carter Oil Co., subsidiary of the Standard Oil Co., of New Jersey, plans an absorption type natural gasoline plant in the Cromwell, Okla., field handling 10,000,000 cubic feet of gas per day. Part of the material, including compression equipment, has been ordered. G. F. Edgett is superintendent of the gasoline department.

The Wertzberger Derrick Co., Tulsa, Okla., recently was incorporated at $250,000 by D. D. Wertzberger, president and Leon Wertzberger and H. A. Scott to increase its facilities to fabricate combination wood and steel oil derricks.

The Amerada Refining Corp., Tulsa, has increased its capital in Oklahoma from $100,000 to $300,000 and plans building of gathering lines and steel tanks.

PITTSBURGH, Sept. 9.—The Calorizing Co., Oliver Bldg., this city, will have on exhibition at the coming International Petroleum Exposition at Tulsa a section through the tube bank of a cracking still demonstrating the use of Calorized steel tubes. The tubes will be shown supported under the middle of the rows by beams made of Calite. Key caps, burners, nozzles and other parts, Calorized to prevent scaling, will also be displayed. The exhibit will be in charge of E. W. Long, district manager and A. V. Farr, vice president of the company.

Would Reconsider Cut In Pig Iron Rates

By Special Correspondent

WASHINGTON, Sept. 9.—Maj. T. W. McM. Woodrow, an examiner for the Interstate Commerce Commission, has recommended to that body that it about face on a decision it made in favor of the Bradford Rig & Reel Co. May 31, 1923, in regard to freight rates on rig irons, in carloads, from Iola, Kans. to Tulsa. In that decision the commission held the rates on rig irons were unreasonable to the extent they exceeded 22 cents per 100 pounds, prior to June 25, 1918, 27.5 cents between that time and Aug. 26, 1920, and 33.5 cents thereafter. It also ordered the railroads to establish that 33.5 cent rate for the future.

Now Woodrow (a cousin of the late president) tells the commission it made a mistake in ordering the rates reduced and in directing the railroads to refund some of the money they collected because, in another case, it ordered a rate of 40 cents for the distance between Iola and Tulsa and for the further reason that it was not accurate when it said there was a heavy and steady movement of rig irons from Iola to Tulsa.

He said that it might be shown in a case brought by the Parkersburg Rig & Reel Co. that the 40-cent rate was too high but he said the proof in the Bradford case, as developed at a further hearing, did not support a decision that 33.5 cents would be a reasonable charge for the service.

The highest rate that was to have been displaced by the 33.5 cent rate was 41.5 cents, or only 1.5 cents higher than the rate prescribed in the case which Woodrow thinks should be used as a criterion.

Marland Inspects Properties

DENVER, Sept. 6.—E. W. Marland, of the Marland Oil Co., has been inspecting the operations in the Fort Collins-Wellington district where his company is said to have been acquiring extensive holdings. He was quoted by local papers as saying he had rather not commit himself on the local situation since he was no prophet, but that it might be deduced as to what he had in mind from the wholesale manner in which he has been buying all good acreage obtainable.

"Drilling operations on our holdings," he said, "will not be prosecuted until some time this fall at the earliest, although these holdings are in the direct line of production. I had rather wait until development has made further progress."

The Marland interests have a large staff of geologists working in Colorado and adjoining states, especially in the Craig area, but at present are drilling only one well in Rio Blanco county, near Meeker.

(Continued from page 31)

tion was discontinued, it having been taken into consideration in establishing the higher premium, the Emery Pipe Line announced.

Mr. Hanks emphasized the fact that Tide-Water's contracts were being offered only to the company's present patrons and no effort was being made to get crude oil from other purchasers' connections. The first notices concerning the contracts were issued under date of Aug. 26 and have been going out since then to the hundreds of small producers with whose tanks its lines connect. Between 65 and 75 per cent of the production had been signed up by the middle of this week in the Bradford field, he said, and about 25 per cent in the Bolivar district, the work in the latter having been started later than in the Bradford district.

Tide-Water Contract

The Tide-Water contract or amendment to division order follows:

"1. The Tide-Water Pipe Co., Ltd., agrees to pay for the oil run at a premium of .....cts. per barrel over and above said company's highest posted market price per barrel, for that particular grade of crude, prevailing on the day on which the oil is delivered.

"2. The Tide-Water Pipe Co., Ltd., is hereby authorized to run the oil under said division order, as herein agreed, for a period of five years from this date, during which period we hereby agree to continue said division order, as amended, in effect. Thereafter said division order shall continue in effect from year to year until discontinued at the end of any year by our or your notice three years in advance. Said amended division order is binding upon our heirs, executors, administrators, successors and assigns and shall be assignable by the Tide-Water Pipe Co. Ltd."

The Emery announcement follows:

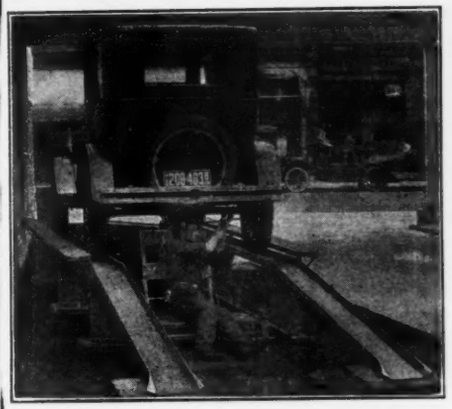
"Effective this date and until further notice we will pay a premium of 25 cents per barrel above the Joseph Seep Agency's posted price for Bradford grade crude oil on the day on which the oil is run into our lines.

"The payment of 8 cents per barrel for lead line compensation as heretofore paid by us, is now discontinued same having been taken into consideration in establishing the above premium."

FORT WORTH, Sept. 6.—R. A. Laning, oil operator in the North Texas district for the past several years, died this week in a Saint Louis hospital after undergoing an operation. Burial was in Terre Haute, Ind., former home.

Laning and D. Moninger formed the firm of Laning & Moninger, operating extensively in the old Burkburnett field, and doing some important "reclamation" drilling and opening up new production areas. They have several wildcat successes to their credit, in Wichita and Archer county.

Laning is survived by his widow, who has been actively engaged with him in his oil operations.



The Auto Service Rack
Built like a steel bridge

No crawling under the car—platform travels-on-track—length of rack.

A roller platform on track with reversible back permits the service man to install large grease gun and tool tray on the platform.

Specifications

Weight—1350 lbs.
Height—24 inches
Clearance under Axle—35 to 40 inches.
Width—7 feet.
Standard Tread—56 inches.
Length of Runways—15 feet.
Length of Approaches—8 feet, 6 inches.
Length Over All—23 feet, 6 inches.

PRICE $135.00 f.o.b., St. Paul, Minn.

Auto Service Equipment Co.
2386 University Avenue St. Paul, Minn.
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Oklahoma Production Declines Despite Large Increase In Tonkawa

Staff Special
TULSA, Sept. 6.

FOR the first time since July Oklahoma production showed a decrease during the past week. Daily average production of the state fell 1372 barrels to an estimated average of 542,998 barrels.

The decrease was registered in the face of the fact that the Tonkawa field maintained its production at more than 100,000 barrels per day throughout the week increasing its daily average approximately 12,000 barrels as compared with the last week in August.

Led by the Cromwell field where production has been slipping rapidly for nearly three weeks, all other fields in the state show more or less important declines.

With no new wells due to reach the producing sand in the Cromwell field for several weeks and the Stroud field slipping rapidly it is felt in many quarters that Oklahoma production has nearly ceased its climb to dizzy heights for the present at least and that there may be a reasonable decline in the state's total during September as compared with the peak reached about Aug. 30.

It has been remarked this week that if the Prairie Oil & Gas Co. does not hurry up and cut the price of Mid-Continent crude it may possibly lose a large part of its reason for making a cut. There are close students of production trends in the state now who predict that even the wonder deep sand in Tonkawa will not bring the production of that pool far above the previous peak of the field which was around 115,000 barrels. It is predicted likewise that the Cromwell field will not pass 85,000 barrels per day even when the new crop of northwest extension wells are brought in.

It should be remembered that the tremendous increase in Oklahoma production during August was almost solely due to the deep sand production in Tonkawa. The increased production in Cromwell did little more than offset the decline of other fields in the state.

Cromwell Declines

During the past week Cromwell production has declined 8930 barrels on a daily average to 51,420 barrels per day from 84 wells. Only one new well was completed as a producer in the field during the period. The production of the field is now materially lower than the figure given as the average for the week indicating that the average for next week will be lower again by a substantial amount. It is estimated that present production of Cromwell is around 47,000 barrels per day.

There are now 20 wells in the deep sand at Tonkawa producing 80,034 barrels per day. This is an increase of two wells as compared with Aug. 30 and an increase of only aproximately 2000 barrels in production of the deep sand. The two wells brought new production in excess of 6600 barrels per day to the field indicating that nearly 5000 barrels of new production is now necessary each week to keep the field from losing ground. Production from the 672 wells in shallower sands has been declining steadily in recent weeks until it is now less than 24,000 barrels per day an average of only about 35 barrels per well.

The Stroud field appears to be definitely on a decline as a result of its record in recent weeks. Daily average production from 48 wells in the field during the past week was 17,960 barrels. This is a decline of 1560 barrels per day in production in spite of the fact that six new wells were completed during the week.

Three new wells were added in the Burbank field during the week bringing the total in Burbank proper to 1377 and in the Kay county extension to 192. Production of the field declined 950 barrels per day to an average of 73,025 barrels.

In the Gilcrease and Papoose fields four new wells were brought in during the week and production declined only 685 barrels to a daily average of 11,635 barrels from 44 wells.

Wells Completed

The number of wells reported completed during the past week is materially lower than in recent weeks. In Oklahoma 43 oil wells were drilled in, two gas wells and 24 operations were abandoned as being dry. During the last week in August 99 wells were completed of which 61 were oil wells, five gas wells and 33 dry holes.

New production reported was much less than a week ago and the average initial production of oil wells dropped to 427 barrels. Total new production was 18,361 barrels as compared with 56,191 barrels during the week ending Aug. 30, when average initial production of oil wells reached the high point of 921.1 barrels per well.

In Kansas 12 wells were completed of which eight were oil wells and four dry holes. The eight oil wells came in with a total initial production of 330 barrels, an average of 41.25 barrels per well.

Field Operations

Field operations show no material change in any field in the state as compared with the end of August. There are 10 more operations in progress in Oklahoma bringing the total to 1385 which represents a substantial decline from totals published earlier in the year. Fewer locations are staked in the Wewoka-Cromwell district but the number of rigs building has been increased from 60 to 74 and two more wells are drilling. In Tonkawa three new locations were staked during the week and seven more wells are now drilling, total operations in the field increasing from 72 to 81.

In Kansas 39 locations are staked as compared with 33, 67 rigs are building as compared with 73 and 140 wells are drilling as compared with 130 in the last week of August.

Two New Tonkawa Wells

The Wentz Oil Corp. and Comar Oil Co. have each completed one well in the deep sand at Tonkawa during the week. Last Monday the Wentz well, its No. 18 McKee, one location south from the tremendous 10,000 barrels No. 45 McKee, was brought in as the nineteenth to reach the Slick pay. This well is now making 3097 barrels per day.

Comar Oil Company's No. 7 W on the E. C. Endicott farm in the SWc NE¼ SE¼ 34-25-1W found the deep sand at 4044 feet. It is still drilling at 4059 feet, 15 feet in the sand and making 150 barrels per hour.

During the 24 hours ending at 7 a.m. Sept. 6 the following production record was made by deep sand wells:

	Barrels
Wentz Oil Corp. No. 18 McKee	3,097
" " " No. 45 "	10,703
Blackwell O. & G. No. 1C McDaniels	5,610
Comar Oil Co. No. 4 Pettit	2,155
" " " No. 1W E. Endicott	4,170
" " " No. 5W "	4,174
" " " No. 6W "	5,225
" " " No. 7W "	3,600
" " " No. 1W L. Endicott	4,713
" " " No. 1W Beverlin	5,665
Pennok Oil Co. No. 1D Endicott	1,800
" " " No. 4D "	1,800
" " " No. 5D "	4,300
" " " No. 7D "	2,400
T. B. Slick No. 1E Endicott	2,350
" " No. 5E "	2,560
Gypsy Oil Co. No. 81 Shawver	3,000
" " " No. 83 "	5,300
" " " No. 84 "	3,076
" " " No. 85 "	4,336
Total 20 wells	80,034

Cromwell Field

In the Cromwell field the Central National No. 1 in the SWc SE¼ SE¼ 4-10-8 has been drilled deeper to a total depth of 3398 feet. The bit is now 74 feet in the sand and production of the

well has increased to around 160 barrels per hour. On Sept. 3 the well made 3198 barrels in 24 hours.

The decline of Cromwell production to its present level of around 47,000 barrels is causing criticism from certain quarters of those operators who have opened up large gassers and permitted the gas to waste, thus lessening the pressure in the field and slowing down the production of the oil wells in all parts of the field. It is pointed out that one or two companies cemented off the large gas flows which they encountered and that if this policy had been made an obligation on all companies that production of the field might be several thousand barrels higher than it is today.

Papoose Pool

The performance of T. B. Slick's No. 1 in the SWc SE¼ of 35-10-9 has created much new interest in the Papoose pool recently. It will be remembered that the well came in as a gasser from sand topped at 3329 feet nearly a month ago. It was drilled only one foot in the sand to a total depth of 3330 feet.

Since coming in the well has begun to produce oil in larger and larger amounts until it is now yielding up around 1147 barrels per day. The well is a full mile west of the nearest producing well in the Papoose pool and operators are playing the well as an extension of that field.

During the past week nine locations have been made and rigs started building as a direct result of the Slick well. Slick, himself, has much acreage between his well and the eastern edge of the field as now known. He has started a well every quarter of a mile from his well to the field in an effort to connect it up.

The Slick rigs are building in the NWc NE¼ NW¼ 2-9-9, NWc 2-9-9, SWc NE¼ 35-10-9, NEc 3-9-9 and NEc NW¼ NE¼ 3-9-9. Kingwood Oil Co. is building a rig for a well to offset the Slick well to the west in the SWc SE¼ 35-10-9. Prairie Oil & Gas Co. is building a rig a quarter of a mile north of Slick's well in the SWc NW¼ SE¼ 35-10-9. C. L. McMahon is building a rig in the SEc NW¼ 35-10-9 and the

Drilling Operations in Oklahoma, Kansas and N. Texas Sept. 6

	Sept. 6 Week Ending					Aug. 30				
	Loc.	Rigs	Drg.	S.D.	Total	Loc.	Rigs	Drg.	S.D.	Total
OKLAHOMA										
Burbank	15	6	70	3	94	10	9	66	3	88
Other Osage	8	13	55	20	96	6	11	49	24	90
Bristow-Cushing	8	25	105	34	172	11	19	108	35	173
North Oklahoma	9	8	60	61	138	10	10	62	58	140
South Oklahoma	6	18	111	69	204	11	18	106	70	205
Muskogee	..	8	39	39	86	..	15	32	40	87
Okmulgee-Bristow	..	46	93	66	205	..	50	90	73	213
Tonkawa	3	5	67	6	81	1	4	60	7	72
Wewoka-Cromwell	23	74	173	39	309	42	59	171	35	307
Total Oklahoma	72	203	773	337	1385	91	195	744	345	1375
KANSAS	39	67	140	126	372	33	73	130	113	349
NORTH TEXAS										
Eastland County	..	1	16	10	27	..	2	18	10	30
Stephens County	..	23	30	39	92	..	23	30	38	91
Texas Panhandle	..	4	23	15	42	..	6	20	18	44
Mexia District	..	14	33	15	62	..	16	34	16	66
E. Texas Wildcats	..	7	11	31	49	..	6	10	33	49
W. Texas Wildcats	..	51	103	116	270	..	49	105	113	267
Total N. Texas	..	100	216	226	542	..	102	217	228	547
GRAND TOTAL	111	370	1129	689	2299	124	370	1091	686	2271

Completions In Oklahoma And Kansas Week Ending September 6, 1924

OKLAHOMA

Carter County—Graham

Company	Well No.	Location	Depth	Init. Prod.
Atlantic	2	C NE NE SW 25-2S-3W	T. D. 3068	450

Carter County

Company	Well No.	Location	Depth	Init. Prod.
Magnolia	7	NEc NE SW NW 31-2S-2W	T. D. 2985	40
Amerada	1	SEc NW 20-4S-1E	1767–1795	26

Creek County

Company	Well No.	Location	Depth	Init. Prod.
Shaffer	1	SWc 13-19N-8E	2553–2720	20
Wilcox	7	NEc SE NW 33-15N-10E	3143–3153	25
Gypsy	1	NEc NE SE 15-15N-8E	T. D. 3903	Dry
Cosden	1	SWc NW 34-14N-10E	T. D. 3329	Dry

Creek County—Stroud

Company	Well No.	Location	Depth	Init. Prod.
Pulaski	2	NWc NE NW 7-14N-7E	4107–4173	340

Creek County—Mounds

Company	Well No.	Location	Depth	Init. Prod.
Flynn	1	Lot 20, Blk 1	2015–2086	35

Grady County

Company	Well No.	Location	Depth	Init. Prod.
Nash-Carter	1	C N½ NE NE 7-3N-5W	T. D. 2500	Dry
Becker	1	C SW NW 11-3N-5W	T. D. 3020	Dry

Hughes County—Papoose

Company	Well No.	Location	Depth	Init. Prod.
Papoose	5	C NW SW SE 4-9N-9E	3325–3333	1900
Transcontinental	3	C SE SE NE 9-9N-9E	3302–3311	600
Tidal Osage	2	SEc NW NE 9-9N-11E	2940–2997	50

Jefferson County

Company	Well No.	Location	Depth	Init. Prod.
Texas	1	NEc SE NE NE 5-7S-5W	T. D. 1819	Dry
Prairie	1	34-6S-5W	T. D. 1229	50

Kay County

Company	Well No.	Location	Depth	Init. Prod.
Ostot	3	NWc SE NE 16-27N-1W	3426–3431	30
Wentz	1	SEc SW 34-25N-1W O.W.D	2203–2222	40

Lincoln County—Stroud

Company	Well No.	Location	Depth	Init. Prod.
Union	2	NEc SE SE 2-14N-6E	4120–4138	40
W.Phillips-Sinclair	1	SEc NE SE 2-14N-6E	T. D. 4160	Dry

Okfuskee County

Company	Well No.	Location	Depth	Init. Prod.
Iron Mountain	2	SEc NW SW 4-13N-8E	T. D. 3500	Dry
Independent	2	NWc SE NW 28-12N-10E	T. D. 3660	Dry

Okmulgee County

Company	Well No.	Location	Depth	Init. Prod.
Kelly	1	SWc NW SW 3-15N-11E	1976–1995	20
Okla. Nat. Gas	2	CNL NW 25-16N-12E	T. D. 2580	Dry
King—Jackson	1	SEc SW NW 2-13N-12E	T. D. 2820	Dry
Henryetta O. & G.	3	SWc NW 4-11N-12E	T. D. 1580	Dry
Utah	12	CSL NW NE 15-13N-14E	T. D. 1966	Dry
Aiken	7	CNL NW 22-13-14 O.W.D	T. D. 1895	Dry
Lambert	6	SEc NE NE 7-13N-15	T. D. 2235	Dry
Galbreath	3	CEL NE SW 26-13-13	T. D. 2192	Dry
Rebold		SWc SE SW 36-11N-12E	T. D. 3253	Dry

Osage County

Company	Well No.	Location	Depth	Init. Prod.
S. S. Home	1	CSL SE 21-20N-11E	2424–2427	190
Breene et al	2	SE NW SE SW 17-21-11	T. D. 2454	45
Marland	1	SE NE 20-23-8	2659–2700	35
Marland	14	SE NE SE SE 20-23N-8E	2664–2700	50
Maxell	5	C SW NW SE 5-24N-11E	1676–1726	40
I. T. I. O	295	NWc 28-25-8	2364–2403	4M
Marland	2	NE SE NE NE 33-25-8	2670–2698	100
New England	10	SE NW SE SW 19-25-9	2249–2260	40

Osage—Burbank

Company	Well No.	Location	Depth	Init. Prod.
Carter	10	C NE SW SE 16-26-6	2872–2940	563
Kewanee	12	C SW NE NE 18-27-6	2910–2970	139

Pawnee County

Company	Well No.	Location	Depth	Init. Prod.
Reese et al	1	NEc 17-20N-8E	2606–2638	410
Prairie	2	15-20N-7E	T. D. 2277	1½ M
Magnolia	1	NEc NW SE 16-20-6	3058–3106	140

Seminole County—Cromwell

Company	Well No.	Location	Depth	Init. Prod.
Cosden	1	SWc SE 15-10N-8E	3398–3494	1440 14M
Cosden	2	C NW SW SE 15-10-8	3413–3519	1032
Carter	2	C NE NE NE 16-10-8	T. D. 3502	1180
Carter	3	C NW NE NE 16-10-8	T. D. 3485	15M
Amerada	2	C SE NE SE 16-10-8	T. D. 3552	1241
Amerada	4	C NE NW SE 16-10-8	T. D. 3572	856
Gypsy	1	C SE SE SE 16-10-8	3477–3537	1800
Gypsy	5	C NE SW SE 16-10-8	3551–3571	720
Shaffer	3	C NW NW NW 22-10-8	3420–3504	816
Shaffer	4	C NE NW NW 22-10-8	3409–3456	30M–50
Shaffer	5	C SE NW NW 22-10-8	3397–3480	1056
Shaffer	6	C SW NE NW 22-10-8	3400–3481	1536
Carter	2	C SW NE SW 22-10-8	T. D. 1510	Dry

Stephens County

Company	Well No.	Location	Depth	Init. Prod.
National Ref	1	C SE NE SW 10-2S-6W	T. D. 3290	Dry
Magnolia	7	NWc NE NW NW 33-1S-8W	T. D. 2830	Dry

Tulsa County

Company	Well No.	Location	Depth	Init. Prod.
S. S. Home	5	CSL SW 6-19N-12E	2070–2102	50
Morgan et al	2	CWL NW NW NW 8-19-12	1991–1998	20
Hazlett et al	2	NWc SE NE 24-17N-14E	1840–1851	7
Terwilliger	3	NWc SW NW 8-19-12	T. D. 2005	Dry
Turman	2	SWc NE SE 23-18-14	T. D. 1400	Dry
McCullough et al	2	NWc SW NW 30-17N-14E	T. D. 1460	Dry
Webber-Taylor	2	SWc NW NE 3-16N-12E	T. D. 1530	Dry

Wagoner County

Company	Well No.	Location	Depth	Init. Prod.
Goble	1	C W½ SE NW 2-17N-16E	682–695	30
Darby	2	NEc NW NW SW 26-18-16E	588–630	50
Buckles	1	NEc NW 10-18-17E	T. D. 900	Dry

KANSAS

Butler County

Company	Well No.	Location	Depth	Init. Prod.
Martin-Gray	1	SEc NE 31-29-7E O.W.D	T. D. 3346	Dry

Cowley County

Company	Well No.	Location	Depth	Init. Prod.
Southwestern	2	SEc NE 6-31-6E	2822–2849	140
Southwestern	4	CNL NE 6-31-6	T. D. 2893	Dry
Bryant-Stinson	1	C NW NW NE 18-32-3E	T. D. 3507	Dry

Greenwood County

Company	Well No.	Location	Depth	Init. Prod.
Gillespie	5	SWc NE NE 19-22-10E	2291–2321	75
Phillips	3	SWc SE SW 30-22-10	2553–2591	15
Skelly	13	NWc 27-22-11	1885–1895	40
Bradford et al	7	CSL SW 34-22-13	1795–1826	5
Theta	7	NWc NE NE 10-23-13	2170–2175	15
Houston-Okla	8	SWc NW NW 14-24-12	1730–1760	50
Pierce et al	1	SWc NW NE 25-25-8	2448–2464	10

Marion County

Company	Well No.	Location	Depth	Init. Prod.
Markham	3	CEL NE SW 8-22-4E	T. D. 2522	Dry

Gypsy Oil Co. is building in the SEc SW¼ SE¼ 34-10-9.

Except to the west in the direction of the Slick well the pool appears to be fairly well limited and the new operations mentioned above will be watched with interest in that they present a possibility that the field may be extended materially.

In the Papoose field itself Amerada Petroleum Corp. has completed its No. 7 Bruner in the NWc SE¼ 16-10-8. The well swabbed 50 barrels from sand at 3512 to 3563 and after a light shot of 8 quarters came in for 300 barrels per day.

Hughes-Seminole Wildcats

Three important wildcats are being drilled in the Seminole area which has yielded so many new pools recently. The wells are being watched with interest and are causing active trading in acreage. Berry Petroleum is building a rig in the SWc NE¼ 31-10-9 between the Cromwell and Papoose pools. T. B. Slick is erecting a rig for a test in the NWc SE¼ SE¼ 27-6-7 and Gillette and Kerr are preparing to drill in the NWc SE 35-9-6.

Josey Oil Co.'s No. 1 Manley in the SWc NE¼ 22-9-9 appears to have opened up another pool in this general area. The well is 2½ miles from the Papoose pool and 2½ miles from the Gilcrease pool. From sand found at 3382 to 3398 the well made 25 million feet of gas and 60 barrels of 43.5 gravity oil. The well is still drilling at a current total depth of 3405 feet.

Another well is that just brought in by the Dixie Oil Co. as its No. 1 on the Ligon farm in the SWc SE¼ 25-8-7, Seminole county, which found sand at 2850 feet. At 11 feet in the pay the well made 280 barrels the first 24 hours. The second day, however, the well declined to 232 barrels and began showing some water.

Roxana's wildcat which was brought in a week ago in the NEc NW¼ 12-8-8, Hughes county is still making 400 barrels per day with the original string of tools still in the hole. The company has been fishing during the week and has recovered all but the original string of tools which is still elusive. The Roxana well is generally considered as the most important of recent developments in this general area.

Kansas Developments

Montgomery county, Kansas, apparently has its third Wilcox sand pool to be discovered during the past year. Kors and Williamson have brought in a well in the SWc 12-33-16E which topped the Wilcox at 1376 feet. At one foot in the sand the well began producing 700 barrels per day. The oil is of 28 gravity and is reported to be similar to that being produced from the Wilcox sand near Coffeyville which is considered valuable for lubricating oil manufacture.

Lease activity has been stirred up by the discovery of a shallow gas sand near Arkansas City. Nathan & Brim in the NWc NE¼ 20-34-4E has four million feet of gas at 1½ feet in sand topped at 654 feet. The gas is being saved.

Confounding those who assert that a well cannot be shut in and later brought back to flow the Alcorn Oil Co.'s Graham in NEc NE¼ 9-33-3E is now flowing 525 barrels per day from sand at 3505-15 feet. The well was shut in for lack of pipe line connection some time ago. When opened up it swabbed about 500 barrels per day but refused to flow. This week it started flowing again.

Importance is attached to the fact that Waite Phillips has apparently found the Rainbow sand in his wildcat in the SWc 29-33-3E. This well is across the river from the Rainbow bend pool and a mile from the nearest producing well. It is reported that the sand was in a broken state similar to conditions found in some of the edge wells in the Burbank field. It is the opinion of some that the well indicates that the Rainbow bend field will extend down to the river on the south. The Waite Phillips well was shot with 30 quarts and is estimated good for about 15 barrels. No water was found in the sand.

Discusses Survey Work In Northeast Colorado

By Special Correspondent

DENVER, Sept. 6.—The first results of extensive geological surveys in Colorado undertaken by the government immediately following the discoveries in the Wellington and Craig districts last November and January by the Union Oil Co. of California and the Texas-Transcontinental Oil companies were indicated the past week in an address given before the City Club of Denver by Dr. K. F. Mather, of the United States Geological Survey. Dr. Mather predicted that within two years the state will be producing several million barrels of oil yearly from the discoveries already made and will closely press if not excel Wyoming in output.

Dr. Mather and his party worked mostly in the northeastern part of the state which has not been as closely examined by the oil companies as other districts on account of the prevailing opinion and former government reports that the drilling would be too deep. These reports were shown by his investigations to be wrong, he stated, and instead of the sands being at a depth of 8000 feet or more through the section from the east to the Nebraska line, there are areas where they will be encountered at 4000 to 6000 feet.

One area to which he made special reference lies in southeastern Morgan county, southwestern Washington county, and northeastern Adams county and is from 30 to 40 miles long and from 10 to 15 miles wide. The investigations brought to light evidence that the Wall Creek sand, the producing horizon in Salt Creek, does not exist in northeastern Colorado but that the probable productive horizon will be the Muddy, the first sand in the Dakota, from which the wells in the Wellington-Fort Collins district are producing. In large areas in that district, he said, the Pierre formation is exposed and is just the Muddy in the geological column, the Fox Hills and the Laramie being absent. This exposure of the Pierre means but one thing, the result of anticlinal structures which very possibly are reservoirs for the accummulation of oil.

These structures, he declared, are more of the Oklahoma type with dips of 1 to 2 degrees as compared to dips of 10 to 15 degrees of the Wyoming domes and while unlikely to develop gushers of the Wellington-Fort Collins type, should be prolific of wells from 100 to 1000 barrels capacity. He says the conditions are so favorable that he does not fear the results of tests by the drill. It was pointed out, however, that running north and south through the town of Greeley in Weld county is a line where the sands probably are at a depth of 8000 feet and out of reach of the drill.

The survey also put the government in a position to point out the hopeless areas in that territory and that this should be done for the protection of the public. His complete report on the two months' survey will be released in Washington in a short time. The Mather party is one of a number of geological crews working in the state for the government and a concerted effort has been made by Senator Phipps and associates to have these reports available for the public at the very earliest convenience.

New Pool Is Opened In Archer County

FORT WORTH, Sept. 6.—Archer county has promise of another new pool, in the completion of The Texas Co.'s No. 1 A. L. Andrews more than a mile from production, for a 150 barrel well in the sand at 1470 feet. This new well is a mile south of The Texas Co.'s wildcat on the Pease Estate, completed a couple of months ago, and itself a jump of better than two miles from production. Improvement in the crude market will govern the development of these newly opened production areas.

Drilling permits are down to an average of a little less than three a day for the Wichita-Archer district. The lifting of prorating last week naturally had an encouraging effect, but operators are evidencing a disposition to wait for more than this before beginning any great amount of new drilling.

The old Serrien pool, the scene of the original "Rainbow End" gusher of some eight years ago, has had the first extension in several years, the Whitney and Cochran No. 1 A. J. Weeth making a 60-barrel well in the 1730 foot sand, about a quarter of a mile south of the old pool.

Completions North-Central Texas District Week Ending September 6, 1924

WICHITA FALLS DISTRICT

Wichita County

Company	Well No.	Lease	Depth	Prod.
Ryan Petroleum	23	Nance	1675	110
Ryan Petroleum	24	Nance	1450	junked
Bower, Bass and Dillard	5	Peeler	1660	80
Petroleum Producers	6	Maer	1660	60
Texhoma-Perkins	1	Burnett et al-A	1810	260
Perkins and Cullum	7	Burnett et al	1815	475
Griswold Oil Corp	4	Parker	1260	40
Magnolia Petroleum	37	Rio Bravo	1780	40
Magnolia Petroleum	8	Beach (Old Colony)	1200	30
Pace and Muse	1	Donehoo	1350	40

Archer County—North

The Texas Co	1	W. L. Andrews	1470	150
Norton et al	3	L. C. Pease Estate	1700	Aband.
C. Rosenfield et al	1	W. F. Woodrum	1825	Aband.
Atlantic Oil Producing	1	W. H. Taylor	1905	Aband.
Oil Investment Co	1	Wilson, Lot 2	1710	Aband.
W. T. Willis et al	4	J. L. Jackson	1825	Aband.
Texhoma-Staniforth	6	Kemp and Kempner	1490	75

Archer County—South

Shamrock Oil Corp	8	Goldsmith	1335	80
Shamrock Oil Corp	9	Goldsmith	1340	80
Ray Featherstone Oil Corp	1	R. E. Farmer	1270	50
Boller et al	1	Falls County School Lands	1800	Aband.

Baylor County

Magnolia Petroleum	1	Portwood	1800	junked

Throckmorton County

Clark et al	1	Tood	825	5 m. dry gas

Grayson County

G. C. Shankle et al	1	Marshall	2300	junked

GENERAL RANGER TERRITORY

Palo Pinto County

Buffalo Brazos Oil Co	1	Dalton	4100	Aband.

Stephens County

Company	Well No.	Lease	Depth	Prod.
Swensondale Oil Co	1	Houston	3400	Aband.
Sinclair Oil and Gas	9	Henderson	3180	5 bbls. oil, 45 bbls. water
The Texas Co	20	Black Bros	3390	10
States Oil Corp	1	Williamson	3910	Aband.
Brown and Company	1	Hudspeth	3300	Aband.

Eastland County

McBride et al	1	White	2780	30
Reclamation Oil	2	Bond	3600	100

Callahan County

Pope and Wilson	6	Albin	2495	260

Brown County

Curry and Conway Bros	1	Chambers	1300	40

EAST-CENTRAL TEXAS

Richland

Gulf Prod. Co	1	Elkins	3020	Aband.
Gulf Prod. Co	2	Elkins	3000	340
W. B. Tucker et al	3	Davis	2960	1500
W. B. Tucker et al	6	Davis	2975	1800
C. A. Tucker et al	4	Davis	2975	400
Charles Rowan et al	2	Davis	2975	500
E. C. Mead et al	1	Davis	2990	300
The Sun Co	13	Brown	2950	650
Godley Oil Co	9	Allison	2975	300
Allison and Peyton	1	Davis	2960	150
J. K. Hughes	4	West	3015	Aband.
Brit Cranfill et al	1	West	3030	Aband.

Powell

L. E. Troutt et al	1	Roach	3510	Aband.
Simms Oil Co	2	Collins	1050	10
Simms Oil Co	4	Boyd	1065	40

Completions Rocky Mountain District Week Ending August 30

WYOMING

Salt Creek

Company	Well No.	Description	Depth	Prod.
Salt Creek Consolidated	33-A	31-40-78	1750W	To be shot
Salt Creek Consolidated	2-A	18-40-78	2543	To be shot
Salt Creek Consolidated	36-A	31-40-78	2427	To be shot
Wyoming Associated	4-A	14-40-79	1870	203
Wyoming Associated	23-AX	25-40-79	1590	250
Wyoming Associated	3-A	24-40-79	2020	79
Wyoming Associated	13	14-40-79	1400	126
Wyoming Associated	23-AX	25-40-79	1590	250
Midwest Oil	33-A	14-40-79	2382	360
Midwest Oil	19-A	1-39-79	1820	To be shot
Wyoming Oil Fields	13-A	23-40-79	1570	337
Mountain & Gulf	33-A	13-40-79	1970	94

Grass Creek

Ohio Oil	19	Wiley	18-46-98	3993	125

Pilot Butte

Company	Well No.	Description	Depth	Prod.
Marine Oil	1		1240	Dry

Schnoor Dome

Kinney—Coastal	1	31-29-80	2485	Aband

Little Lost Soldier

Producers and Refiners	5		2112	300

Arminto

Wyland Syndicate	1	20-37-86	1950	Gas

MONTANA

Kevin—Sunburst

California Co	4 McKee	35-35-2		25
Bill Thomas—Hurley	2	8-34-2	1470	25

Completions In North Louisiana And Arkansas Week Ended September 4

LOUISIANA

Cotton Valley

Company	Well	Location	Depth	Yield
Hude & Aarnes	W. W. Cox No. 2	22-21-10	2543	5 m. gas
Humble O. & R. Co	A. J. Hodges A-1	10-21-10	2464	dry aband.
Invincible Oil Co	Lindsey No. 1	22-21-10	2535	400 oil and 15 m. gas
Ohio Oil Co	E.C.Holloway No.1	23-21-10	2505	35 m. gas

Bossier Parish—Bellevue

Humble O. & R. Co	T. J. Taylor No. 2	16-19-11	430	25

Morehouse Parish

Ladel et al	Feazel No. 1	22-20-5E	2280	40 m. gas
Nat. Gas & Prod. Co	Crosset No. 12	35-21-4E	2165	10 m. gas

Ouachita Parish

Southern Carbon Co	Fee No. 35	5-19-5E	2240	3 m. gas

TEXAS

Panola County

Magnolia Pet. Co	T. C. Davis No. 1	Mathews HRS	1975	15 m. gas

ARKANSAS

Stephens

Company	Well	Location	Depth	Yield
Magnolia Pet. Co	Rhinehart A-2	36-15-20	2205	25

Smackover

Gulf Ref. Co	Burton A-1	25-16-16	2080	125
Atlantic O. & P. Co	Wells B-3	25-15-17	2290	40
Lee, trustee	Smith No. 1	26-15-17	2360	45
Ark. Invincible Co	Patton No. 9	31-15-16	2275	10
Forrest Oil Co	J. A. Cramer No. 3	27-15-16	2297	100
Forrest Oil Co	E. C. Cramer No. 5	22-15-16	2298	200
Sutton, Emery, Brown	Ebenezer No. 1	20-15-16	2302	100
Weaver & Smithwick, tr	Tuberville No. 1	17-15-16	2335	s. w. aband.
Baggot et al	Murphy No. 1	36-16-16	2105	s. w. aband.
Bauxite Oil Co	Murphy No. 1	35-16-16	2070	s. w. aband.
Holliday, trustee	Goff No. 5	6-16-16	2270	60
Magnolia Pet. Co	Bradford No. 1	8-16-15	2298	35 m. gas
Page et al	Alphin A-1	30-16-16	2405	s. w. aband.
Pure Oil Co	Burns No. 2	20-16-15	2105	100
Standard Oil Co	J.H.Alphin No.4	2-16-15	2270	25 m. gas
United Central Oil Corp	Burton No. 2	25-16-16	2045	150

Gulf Coastal, Texas Completions, Week Ending September 6

Company	Lease—Well	Field	Depth	Prod.
Gulf Coast Oil Corp	Gaillard 21 Acres 28	Goose Creek	3165	Aband.
Southern Exploration Co	Wright 7	Goose Creek	1575	200
Texas Vacuum Oil Co	Hannah 3	Hull	2850	100
Gulf Production Co	Phoenix 36	Hull	3450	100
Gulf Production Co	Morris-Phillips 12	Hull	3475	20
Republic Production Co	Dolbear 87	Hull	2750	200
The Texas Co	Hogg 80	West Columbia	2775	7000*
Humble Oil & Refining Co	T. & M. 9	West Columbia	2925	50
Gulf Production Co	Lee Hager Fee 16	Orange	3550	150
Gulf Production Co	Hager & Moore 8	Orange	3500	150
Paggi Bros	Kirby 5	Saratoga	655	12
Rio Bravo Oil Co	"B" 10	Saratoga	965	Aband.
Minor Oil Co	Fee 73	Sour Lake	1800	Aband.
Vinton Petroleum Co	Gray 48	Vinton, La	2530	125
W. H. Bardin	Arnandet 5	Evangeline, La	1850	50*
O. Absher, Trustee	S. F. and S. 1	Evangeline, La	1800	50

*—Workover.

SHREVEPORT, Sept. 6.—The Waterman No. 1 of Thigpen, Herold & Muslow, Shreveport, located in Harrison county, Texas, blew in Wednesday at 951 feet while operators were attempting to set 8-inch casing, with estimated gas yield 12 million cubic feet. It is two miles northeast of Bell & Mays' Bryerson No. 1, which blew in about the same depth several days ago with estimated yield 25 million cubic feet. It is believed the new gasser assures another shallow gas field from which Shreveport will obtain additional fuel.

Completion On Iles Dome May Add New Field To Northwest Colorado

By Special Correspondent
DENVER, Sept. 6.

AN impending completion by the Midwest Refining Co. on the Iles dome, in northwestern Colorado, where the drill is working slowly towards the sand in a column of oil that is occasionally slopping over the top affords the principal interest in Colorado this week.

The Fort Collins-Wellington district is showing an increased activity with the successful shutting in of the Mitchell gasser of the Union Oil Co. of California on the Wellington dome and the definite proving of the Fort Collins dome by the same company's Whitaker No. 1 which is now a month old but still uncompleted awaiting the erection of sufficient tankage to take care of the large flow of oil expected when the well is opened to shut off the seepage oil from between casings, carry the inside casing to the bottom and drill in. Several edge wells to test the productive area are being started and some operators are commencing wildcat tests that are gambles on the productive area being larger than first supposed.

The Moffat dome has three wells at an interesting stage which have been held back by fishing jobs though one of them is showing quantities of oil from the shale and another is on top of the sand being prepared for drilling in. A big pipe line project across the mountain range is being negotiated by large financial interests of New York.

Wyoming has several good wildcat showings and the completions in Salt Creek show up a little better on initial production than for several weeks. The Midwest has a good showing northwest of Casper in a wildcat and another has showings in a test only 18 miles away from that city.

Colorado

Colorado's interest this week was largely centered in the expected completion in the Midwest Refining Co. French No. 1 well on 22-4-92 on the Iles dome in Moffat county, 5 miles southwest of the Moffat dome, which is drilling at 2599 feet with the oil slopping over the top occasionally and the Dakota sand expected at 2653 feet. This oil is coming from the shale which was encountered at 2545 feet and has since persisted all the way down. The progress is slow, 8 or 9 feet a day, on account of the hole being full of oil and the desire to cautiously feel the way into the sand.

Interest in the test lies principally in the outlook for the opening of the second oil pool in northwestern Colorado. Production at present is coming from only one well on the Moffat dome and while 19 wells are drilling on 7 separate structures in Moffat county, only the one structure has been proven. The coming in of another field will do more than anything else just at present to extend the interest in the development work and the Midwest well is looked upon as the probable scene of the next strike. The only other well in the county to be completed recently was the Hogan well on the Iles structure which encountered water but was 700 feet down on the flanks and not conclusive. Routt county, adjoining Moffat on the east, had one partial failure several weeks ago in the Transcontinental Oil Co. well on the Beaver Creek dome which found water in the Dakota but it is being carried on down to test the Lakota.

Chas. H. Sherman, manager of operations in Rocky Mountain district for Union Oil Co. of California, at the Whitaker well

Interest next centers in the Wellington-Fort Collins district in Larimer county where the Union Oil Co. of California is the principal operator. The big 80,000,000-foot gasser on the Fort Collins dome which came in on July 19, caught fire four days later and burned until August 15, has been capped and shut in and no further developments from that source are expected until some plans are worked out for marketing the gas. Ten miles to the south on the Fort Collins dome, the Union company is still working with its discovery well, the Whitaker No. 1 on 30-8-68 which came in as an oil producer on July 7 at 4475 feet. Present operations are confined principally to keeping the oil moving from between the several strings of casing to prevent a blowout during the erection of tankage to take care of the large flow expected when the well is opened up. The battery of twelve 250-barrel tanks is full of oil and there are more than 6000 barrels in the sump, all of which is seepage oil. Several of the 5000-barrel tanks on the tank farm half a mile to the north have been finished and the seepage oil is now running into them. The company has begun to sell oil in the field for fuel purposes but has taken no other steps towards marketing the output pending the completion of the well.

Completion is Delayed

The seepage flow amounts to about 800 barrels a day being taken off through a 2-inch line. Last week the 6-inch casing valve was opened for just a few minutes. The oil spouted out in a solid stream. The volume increased rapidly and the fittings commenced to heat up. It was immediately closed as everything indicated that if allowed to flow it would drill itself in and probably get out of control, raise the 6-inch casing and wreck the well on account of the seepage oil softening up the formations around the several strings. The casing is about 10 feet off the bottom and it looks as if the completion of the well is going to be quite a problem. It may be necessary to mud off the oil and temporarily kill the well until the inner casing can be set and the outer casings cemented to make formations shut-offs.

The Union company is getting ready to start several additional wells two of which will be on the Wellington structure and one on the Fort Collins dome. The next Fort Collins well will be on the SW¼ of 24-8-69 about 1¼ miles northwest of the discovery and outside the closing contour as shown on the original maps. The Wellington wells will be on the southwest corner of 32-10-68, about half a mile northeast of the Mitchell gasser, and on

36-10-69, on the west side. These locations are slightly outside the closing contours and indicate that the company is going to feel out the limits of the pool and definitely determine if the structure is larger than the first maps showed.

The Douglas Lake Well of the Union company on 36-9-69, is now attracting attention. This is the pioneer well on that dome which lies directly west of the saddle between the Fort Collins and Wellington structures. The hole is now down around 3500 feet and still has several hundred feet to go. The structure originally was not considered as promising as the two neighboring domes but when these came in as large producers of gas and oil with heavy pressure attention was attracted to las Lake. The well has had several showings of oil in the shale and while these have not been important they are of a very encouraging nature.

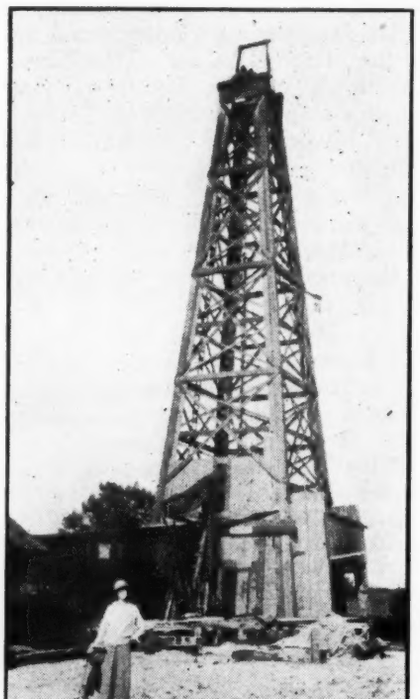
Half a mile southeast of the Whitaker well on the Fort Collins dome, and on the same section as the discovery well, the Union company is drilling its Scott No. 1 that is of especial interest for several reasons. The outfit is one of the largest and strongest ever used in the Rocky Mountain district. The derrick is 122 feet high and built entirely of steel and heavily re-inforced crown block and capable of lifting 1,250,000 pounds. The rig is a California type of combination standard and rotary. The well was started with the intention of going through the gas-producing formations to test the lower sands supposed to underlie the Muddy, the first in the Dakota series, from which the gas is coming in the Mitchell and discovery wells. The well was started with a 20-inch hole and the intentions were to go into the gas sand with the 8¼-inch casing, mudding off the gas with the rotary with the cuttings, and carrying the casing straight through the gas formations.

The importance of the test may be judged from the fact that the two wells on the Wellington dome blew in as gassers with a pressure of 1240 pounds to the square inch before they reached the sand. Both wells began to spray oil before they were shut in. The actual location of the sand was, therefore, not determined. Neither was it ascertained whether the oil was coming from the flanks, from the lower part of the sand beneath the gas or from another sand below. The company decided to find out the exact facts so it may benefit from the knowledge in future drilling operations.

Formations Harden

The well spudded in on April 28, or 12 weeks after the Mitchell well commenced making depth and which was completed a month ago. On account of a rotary being capable under normal conditions of reaching the sands much quicker than standard tools, it was expected that the Scott well would be the first to be completed. But the calculations were upset by a pronounced change in formations. It ran into hard rock, pebbly ground and cavities and is now down only 2800 feet. There is talk of shifting the rig nearer to the discovery well and completing the hole with standard tools but whether this will be done remains to be definitely determined. It is now admitted, in the light of what has been disclosed, that a more satisfactory test would have resulted had the big outfit been placed on the location of the Whitaker well.

Another interesting operation on the Fort Collins dome is getting under way.



Derrick of the Whitaker well at Fort Collins, Colo.

This well has been spotted on the southwest corner of the NW¼ of the NW¼ of 33-8-68, about one mile east of the closing contour as shown in the original maps. It will be drilled by I. S. Brendle, Paul S. Ache and Flynn Brothers, of Pittsburgh, who have obtained leases on 1600 acres. It is being drilled on a gamble that the structure is really larger than shown by the geological maps.

Northwest Colorado

The Moffat dome in northwestern Colorado has little news to offer this week and everybody has assumed a waiting attitude principally on account of fishing jobs on the two wells nearest the sand. The Freeman No. 1 of the Texas Co., on 28-5-91, juts to the north of the discovery well on Sec. 33, is down 4014 feet and tied up with a joint of casing in the hole. It is still about 200 feet off the sand which shows that the structure dips very rapidly to the north and there is little hope for its coming in as a producer unless there is a surprise in store. The Weyand No. 1, a joint well of the Texas and Transcontinental companies, on the same section and to the north of the discovery, is also held up by a fishing job at 3784. It is believed to be on top of the sand and is showing some indications of oil and gas and looks favorable for a producer. Meyers No. 1 on 9-4-91, encountered oil in the shale at 2721 feet. The oil rose 1500 feet in the casing and is coming from the shale at approximately the same depth the shale oil was found in the discovery well.

The Marland Oil Co. struck salt water at 400 feet in its test on 20-1n-93, near Meeker, in Rio Blanco county, which was shut off and drilling is now in progress at 700 feet. The Dakota sandstone outcrops near the well and the water was expected.

A test being drilled by T. S. Hogan on 16-5-94, West Axial dome, Moffat county, 18 miles west of the Moffat dome, which picked up the Frontier sand at 630 feet, is drilling at 885 feet, and due to reach the Dakota at a little under 1000 feet, proving it to be the shallowest operation in northwestern Colorado. The Frontier (Wall Creek) was 105 feet thick and carried some water and considerable gas which is a favorable indication as the sand is water bearing throughout the district.

Another structure is to be tested in Larimer county, by the Gateway Oil Co., which has taken over the properties of the Dry Creek Oil & Gas Co. on the Dry Creek structure 4 miles west of Loveland. It will be located near a well started four or five years ago on 19-5-69 and drilled to 1400 feet but discontinued for lack of finances. The old well had some good showings but never reached a depth sufficient to reveal anything of importance.

Wildcat operations in Colorado are continually extending out into new districts. The latest include three tests on new structures in San Miguel and Montrose counties which adjoin Utah in the southwestern part of the state. The Gilmore Oil Co. has received a lot of equipment at Placerville and is moving it out into what is called the Paradox and Naturita districts. The exact locations are not known but they are in an interesting section. The Naturita and Paradox valleys are the source of the principal radium supply of the world produced from carnotite ore, a yellow ore found in pockets and named after a former president of France. The company was interested in the district by officers of the Standard Chemical company, owned by Pennsylvania capital, and which operates the carnotite properties. San Miguel county is also known as one of the principal silver producing districts in the state. The oil structures are considerably west of Telluride, a famous mining town.

The Texas Co. is also getting ready to test another structure, the Tow Creek anticline, 18 miles west of Steamboat Springs, in Routt county. It is a large structure and oil seeps on the flanks have been known for many years.

Grand County, Utah, Test Shows Oil In Promising Quantity

By Special Correspondent
DENVER, Sept. 6

PROSPECTS for opening a commercial oil pool in Utah are very bright as a result of a strike made by the Crescent Eagle Oil Co. six miles west of Thompson station on the Denver & Rio Grande Western railroad, in Grand county, 40 miles west of the Colorado boundary. First reports of the well came in a dispatch from Grand Junction, Colo., on Sept. 1 stating that it had blown in and had wrecked the derrick and had torn a hole around the top of the casing. Denver & Rio Grande Western officials in Denver wired their Salt Lake City agent to go to the well at once and report the facts.

The railroad official reporting to headquarters stated that the well came in at 3205 feet at 9 o'clock on the morning of Sept. 1 and blew oil and water 40 feet over the top of the casing. The cable broke when the tools stuck about 20 feet off the bottom and the flow of oil had been shut off. The telegram stated that the ground showed oil all around the derrick and that the pressure was about 130 pounds to the square inch. The last is believed, however, to be an error as another report gave the figure as 500 pounds. The railroad agent quoted the drillers and A. G. Burritt, geologist for the company, as stating that the discovery definitely proved the field.

The striking of oil in the Crescent Eagle well did not come as a surprise to the few who had been watching the wildcat. It had been showing oil and gas in considerable quantities in the shale for the past 1000 feet. On Aug. 16 the hole began to show an increase in the quantity of oil and gas at 3120 feet and at 3150 feet the pressure of the gas had increased sufficiently to raise the tools in the hole. The hole then began to fill with fluid until there was 700 to 800 feet of oil and 400 to 500 feet of water. The fluid held back the gas pressure so that the tools could be run and drilling was resumed with the sand being picked up at 3205 feet. It will be necessary to clear the hole of the tools and set the casing before any reliable estimate can be made of the capacity of the well and it is probable that it will have to be drilled deeper into the sand before a full appraisal of the value of the strike can be determined.

Test Long in Drilling

The test was started several years ago by Salt Lake City people and was drilled at intervals until it became necessary to enlist more capital when California parties became identified with the project. At 2330 feet, in December, 1923, the hole was showing considerable oil and gas and had one or two blowouts. It was caving badly and had considerable water in it. Several months were required to get it in shape for additional drilling and for the past month fairly good progress has been made. At the time of the strike the bit was working in a 4½-inch hole of which 1000 feet was not cased making it easy for the tools to stick and make a bridge.

The district is one that has been attracting considerable attention recently. Twenty miles east of the Crescent Eagle well, at Cisco, are several wells which have shown considerable oil and gas at around 500 feet. To the northwest of the Crescent Eagle is what is known as the Cisco fold on which the Midwest Refining Co. is starting a test for the Utah Oil Refining Co. The sand from which the well is producing has not yet been definitely identified but most likely is a member of the Dakota series. The oil is of light amber color and appears to be of a high grade of 48 gravity and estimated to carry approximately 50 per cent gasoline. The Midwest and other large operators have sent scouts to the well to make an investigation and full details are expected within a few days.

Derrick of the No. 1 Scott well, Wellington Dome, Colorado, one of the best outfits ever put up in the Rocky Mountain district. It is a combination rotary and cable outfit.

Utah does not rank at present as a commercial oil producing state unless the small operations at Cisco and in the Virgin field in Washington county be so considered. The Virgin field had some production at around 500 feet several years ago but it was not developed to any extent. Recently, the Gustaveson Oil Co. has gone in there and opened up several wells making from 25 to 80 barrels from the shallow depth. In San Juan county, in the southeastern corner of the state, oil was discovered at shallow depths about 20 years ago but the land was withdrawn from entry by the government and development lagged. When the leasing act went into effect in 1920, the operators went back and several wildcats have been drilled. The Midwest interests secured some oil on the Boundary Butte structure at around 1600 feet in the Shinarump conglomerate but the well has not yet been drilled to the Pennsylvania sands, the objective horizons. Around Mexican Hat, the scene of the old operations, two or three wells good for 50 barrels each at around 300 feet have recently been drilled.

Two years ago the Ohio, Midwest, Carter and other companies undertook extensive exploration operations in the central and south central part of the state but these were all failures though large sums were expended. The Ohio Oil Co. abandoned a test in the Circle Cliffs district at 3212 feet and the Carter Oil Co. drilled into water at 2800 feet on the San Raphael swell in Emery county. The Ohio drilled to 3600 feet in the Cainville district and the Leonard Petroleum Co. went to 3000 feet on the Salt Wash dome. The Ohio also drilled on the Huntington dome to 3100 feet and found nothing but a few gas pockets. Midwest tested the Hill Creek dome to 2100 feet and the Utah Southern drilled to 2850 feet on the Green River structure.

Encouragement at Coalville

These unfavorable results discouraged the operators until the past year when the Ohio went into the Coalville district on the Denver & Rio Grande Western, where it has a hole down 3000 feet that has very encouraging indications. The Utah Oil Refining Co. put down several tests at Woodside and these were likewise failures. Recent investigations indicate that the formations which carry oil in northwestern Colorado are in place in eastern Utah east of the north and south line which marked the former developments and investigations made by the Midwest on the Cisco fold were considered sufficiently promising to cause that company to go back into the field and there is a feeling that the former period of bad luck is to be succeeded by a more profitable experience.

The Ohio Oil Co. test which is now showing up so favorably, is located on 6-2-6 in the Chalk Creek district near the town of Coalville. It had considerable water at 2000 feet and at 2260 feet picked up a showing of high grade oil of high gravity amounting to 2 to 15 barrels. It then ran into more water and then struck more oil, probably 30 barrels a day, at 2935 feet. More water came in at 2960 feet and the 4½-inch casing was run at 2985 feet. Officials are very hopeful of bringing in a producer.

The Utah Oil Refining Co. operation on the Cisco field, is however, especially promising. The test is located on SE¼ of NE¼ of 25-20-21E, in Grand county. This fold appears to have ap-

proximately 9000 to 10,000 acres of possible productive oil acreage inside of the 5250-foot contour. The structure has a closure of at least 350 feet and it is estimated that the depth to the Dakota will be around 2500 feet and 2650 feet to the McElmo. The well was spudded in on August 21 and is making excellent progress, the present depth being around 750 feet.

The test appears to hold out promise of production on account of the fact that on an extension of the fold to the southeast about 12 miles distant, several shallow wells have been drilled in the past few years by the Utah-Arizona company and associates, in which considerable production was obtained. Most of these wells were, however, off structure but in spite of this one of them obtained a daily production of 6 to 8 barrels. Other of these wells produced considerable gas. For the past eight or ten months the Midwest geologists have detailed this structure, such work resulting in their recommending that it be given a thorough test. Progress is being watched very closely by the oil industry.

The Crescent Eagle well, the scene of the latest reported strike, is located, according to some geologists, where there is no reason to expect oil. The surveys indicated that there is no structure at that location unless it is a small monocline and that the well is most likely in a syncline.

Wyland Syndicate Finds Good Gas Flow On Arminto Dome

DENVER, Sept. 6.—Completions in Wyoming for the week offered nothing of importance with but one or two exceptions. Salt Creek had 12 completions of which 4 are to be shot and the remainder had a flush production of 1699 barrels. The Producers & Refiners Corp. had a completion in its No. 5 on the Wyo.-Ill. lease in the Little Lost Soldier field, Carbon county, which is flowing at the rate of 300 barrels a day from what is believed to be the Sundance sand at 2112 to 2122 feet. The hole had previously picked up a stray sand at 1968 to 1974 feet which probably would have been good for 25 barrels. The oil is 30 gravity and a little different from the other crude in the field.

The Wyland Syndicate opened up a flow of between 3,000,000 and 4,000,000 cubic feet of gas in its wildcat on 20-37-86 on the Arminto dome, in Natrona county. The sand was topped at 1950 feet. It will be carried on down to 2000 feet where it is expected to strike the Frontier though it is possible that the gas strike is really from that sand instead of a stray. This well also had a showing of 500,000 to 1,000,000 cubic feet of gas at 1787 feet. The gas discovery indicates a closed structure and the results are being closely watched. The syndicate is headed by John Wyland of Casper who has been active in Wyoming for several years.

The Mutual Oil Co. is reported preparing to double the capacity of its refinery at Glenrock and at the same time the Standard Oil Co. of Indiana will enlarge its cracking plant adjoining the Mutual refinery from 1500 to 3200 barrels. The White Eagle Oil & Refining Co. is finishing up the installation of some new stills at its Casper plant. These will not increase capacity but will permit a greater recovery of gasoline.

Wild reports were circulated the past week to the effect that the Midwest Refining Co. had completed a 10,000-barrel well on 36-37-82, in its No. 1 on the North Casper Creek structure 32 miles northwest of Casper. The facts are that the well did make a big flow but it was mostly water, the oil amounting to about 50 barrels. The sand was tapped at 2020 feet. The sand is believed to be a stray and will be cased off for deeper drilling. This well encountered a flow of 10,000,000 cubic feet of gas at around 1000 feet some time ago. While the results are encouraging up to this time, it is too early to say whether a new field is to be brought in.

There is considerable interest in the territory to the northwest of Casper and another wildcat attracting attention is that of the Bradford-Wyoming Oil Co. on 23-34-82, about 18 miles northwest of Casper. At 1410 feet the drill had gone through 7 feet of hard limey formation, the last 3 feet being in what is believed to be the Chugwater. Cuttings from the bottom show oil saturation and the well is making about 500,000 cubic feet of gas. A field within that distance of Casper would be of inestimatable benefit. The same company had previously drilled another test in that area and the second well shows the structure to be about 1000 feet higher.

Good Salt Creek Well

CASPER, Sept. 5.—Empire State Oil Co. last week brought in another good well on its lease in the Salt Creek field. This was No. 32 in the northeast of 12-40-79. It made 486 barrels the first 24 hours. Rig is up on location No. 19 of the same lease and will be drilled at once.

OTTAWA, CANADA, Sept. 5.—Production of oil in Canada in 1923 was only 1.3 per cent of the consumption of crude and refined oil in the same period, and was obtained entirely from the three provinces of Alberta, Ontario and New Brunswick.

Will Not Burden Oil Men With Taxes

By Special Correspondent

DENVER, Sept. 6.—The Colorado Tax Commission has indicated in a letter to the assessor of Moffat county that the commission has no intentions at this time of putting heavy tax burdens on the oil producers who have come into the state to prospect and that while property will be assessed at full cash value, this value will largely be determined by the purchase price for the present. The letter, which is of interest to all oil men, is as follows:

"Replying to your letter, will say this commission has carefully considered the matter and holds that oil lands, oil land leases, oil wells are assessable at their full cash value under our general property tax system.

"Oil lands and leases are assessable at their actual value, the same as farm lands, and do not come under the laws covering the assessment of metal mines.

"Oil leases on state and government lands are assessable at their full cash value. In arriving at such value you should take into consideration all elements that enter therein, the same as other property. However, we would suggest that caution is used in regard to such values, until they become fairly well settled and more or less certain.

"Until such values are more certain than at present, we doubt if any of the above classes of property should be assessed at more than the actual money invested therein at the time of making the assessment. However, we feel that persons and companies who have made cash investments in the more promising properties should be assessed on a basis of said actual investment until values are more fully developed.

"Oil and all by-products of oil on hand are clearly assessable under the merchandise and manufacturing statute; the average value of the same should be taken for the year previous to April 1, or if the concern in question has not been in business a full year the average should be taken for the number of months actually in business."

May Enter Alberta

OTTAWA, CANADA, Sept. 6.—The Gladys-Belle Oil Co., of Tulsa, Okla., one of the large independent companies of the southwest, may actively enter the Southern Alberta field developing the 15,000 acres of leases held by them in the vicinity of the Rogers-Imperial well. Grant C. Stebbins, of Tulsa, Okla., president of the Gladys-Belle Co. is now in Alberta looking over the field.

One drawback to oil development in Canada, in Mr. Stebbins' opinion, is the high duty on machinery and casing. He considers this adds $15,000 at least to the cost of putting down a well. He says he is convinced that Western Canada, some day will be a big oil producer.

Extension Well To Cotton Valley Spraying 500 Barrels Daily

By Special Correspondent

SHREVEPORT, Sept. 5

THE Invincible Oil Co.'s Lindsey extension, in 22-21-10, Cotton Valley field, the completion of which was recorded in these columns last week, was re-opened late Monday afternoon, after having been shut in to await the completion of earthen and steel storage. When first re-opened Monday, it failed to flow, due, no doubt, to the accumulation of oil in the hole. It came in in gusher style after having been swabbed a few times, however, making a briet head of oil, followed by a heavy spray. Subsequent gauges show that this spray of oil totals upward of 500 barrels per day. The spray is being conserved by a wooden flow-box, of the same type in use in the older section of the field.

Hude & Aarnes' No. 2 Cox, located a quarter of a mile east of the Invincible's well, which was completed three days later at a depth five feet shallower, by sea-level comparison, makes about 30 million cubic feet of gas and a very light spray of oil, sufficient only to stain the flow-box into which it is blowing. It is said that No. 1 Cox, a dry gas well located on this same tract, is to be killed and drilled deeper to the horizon from which oil production is being obtained in the Invincible Oil Co.'s Lindsey well.

The Ohio Oil Co. has drilled into 49 feet of broken sand at a total depth of 2560 feet in its No. 1 Bank of Cotton Valley, in 21-21-10, less than a half mile southeast of the Invincible's oil well and today bailed it in for 25 million feet of gas with no oil. According to current reports, this well was drilled 20 feet deeper, below sea-level, than the Invincible's well, which is the deepest well in the southwest extension. It probably is the deepest well in the entire field and opinion is that it was drilled too deeply. It made a spray of salt water.

Robinson & Greer have set lines in their No. 1 Duke, also located in Sec. 22, about three-eighths of a mile southeast of the Invincible's well and will bail it in at total depth of 2536 feet. Six-inch casing has been set in the Woodley Petroleum Co.'s No. 1 W. D. Merritt, on the southwest 40 acres of Sec. 14, a well which may furnish interesting data regarding the possibility of oil production from the crest of the structure.

Attention during the next week is likely to be focused on the outcome of the test to be made soon in the Pardee well, drilled by the Alabama Petroleum Co. and Moffett & Murphy, in the northwest corner of the southeast quarter of the northeast quarter of 24-21-10, which is said to be checking lower, structurally, than gas wells in Secs. 22 and 23. If not too low on the slope, this well may be the first to produce oil on the southeastern flank of the structure.

New locations have been made in the southwest extension by S. S. Raymond and Jim Evans on the Gaynor twenty acres in the southeast quarter of section 21; by the Gulf Refining Co. on the Cox land in the southwest quarter of Sec. 15; by the Invincible Oil Co. on the Crichton land in the northeast quarter of Sec. 21; and by the Ohio Oil Co. in the southeast quarter of Sec. 15. It is believed that, if either of the three current tests mentioned above should develop oil production, an active drilling campaign may ensue.

A. L. Edsell, Service Manager, in charge of purchasing, warehousing, machine shops, motor transport, and material accounting for the Louisiana Oil Refining Corporation, Arkansas-Invincible Oil Corporation, Invincible Oil Company, Montrose Oil Refining Company, Inc., and Gladstone Oil & Refining Company, subsidiaries of the Invincible Oil Corporation, which operate in the states of Louisiana, Arkansas, Texas and Oklahoma.

A flurry of interest has been aroused by recent reports of a showing of light oil obtained from the deep, or 2200-foot, sand in Sec. 4-16-15 of the heavy oil section of the Smackover field, in Union county, Ark. This sand produces light oil in the Louann-Griffin or western section of the Smackover District; but, as yet, it has produced only gas in the eastern section. Clark & Melat's No. 1 Murphy, in the northeast corner of Sec. 4-16-15, which was completed several weeks ago as a gasser, was reopened last Monday through a ¾-inch choke. It flowed at the rate of 150 barrels of cut oil, showing some salt water, and made at the rate of 25 million cubic feet of gas per day. Later unverified reports are to the effect that it is making cleaner oil.

National Supply To Exhibit Epuipment In Operation

TOLEDO, O., Sept. 8.—One of the largest and most complete exhibits of oil field equipment will be shown by the National Supply Company at the International Petroleum Exposition and Congress during the week of Oct. 2 to 11 at Tulsa. The exhibit, which covers 2000 square feet of floor space in the Kansas Bldg., and 3300 square feet of out-door space adjoining the building, will display rotary and cable tool drilling equipment and other heavy machinery in the outdoor area.

Rotary drilling methods will be represented by a complete rig consisting of a Slater derrick and Ideal rotary equipment, operated by an Ideal-Ajax twin drilling engine. The initial showing of the Ideal Universal rotary, No. 11 Ideal three-speed draw-words and the new Broderick boiler is being featured in this exhibit.

A No. 3 National portable drilling rig, operated by the new Superior gas drilling engine, will demonstrate cable tool drilling. Heavy machinery exhibit includes the Superior direct-driven gas compressor, which is another new Superior product, Superior oil and gas engines and an Ingersoll-Rand vacuum pump.

A pumping equipment display composed of a No. 12C National pumping power, No. 6 National geared single eccentric pumping power, and an Ideal reduction gear, will be housed in the Kansas Bldg., entire exhibit to be in operation demonstrating the self-contained system of flood lubrication employed by the No. 12C power.

Exhibits of The Columbian Rope Co., John A. Roebling's Sons Co., Manhattan Rubber Mfg. Co., Dayton Pipe Coupling Co., and Ajax Iron Works, whose products are distributed by the National Supply Companies, are also shown in the Kansas Bldg.

Practically all machinery shown will be in operation. National Supply Co. engineers will be in charge of the equipment and will be at the service of those in the industry.

Kentucky Company Saves Money Cleaning Wells With Tractors

Staff Special

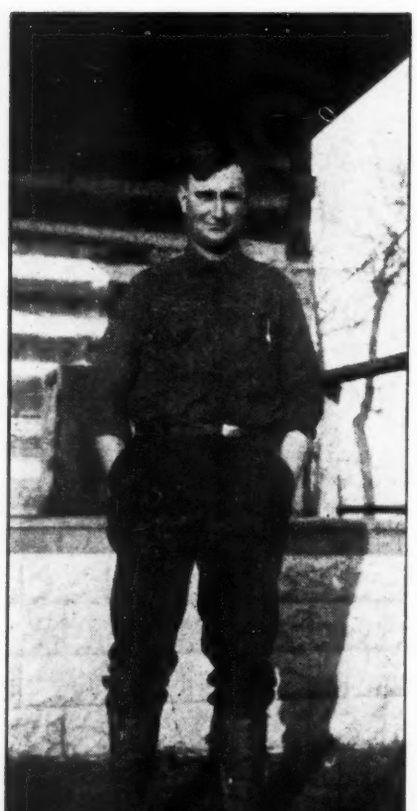
CLEVELAND, Sept. 6

PULLING and cleaning wells is a big factor in oil production anywhere, but in Lee county, Ky., it has been especially so. In this county is the Big Sinking field, one of the most important ever developed in Eastern territory.

One of the companies which has effected an important saving by the use of tractors in pulling is the Bald Rock Oil Co. Until recently mules formed a necessary part of lease equipment. The country is very broken and it was thought that only the sure-footed half-brother to the horse could make the grade—and a steep grade it was.

The Bald Rock's property is divided roughly (no pun intended) into three parts: the "hollow," north and south cliffs. The locations were difficult to reach in the first place and have not become any easier with the drilling up of the property, except that rough roads were laid out and brush cleared.

The Bald Rock company decided, however, to try out tractors. The Eastern Gulf Oil Co. was another operator that put them into use Equipment used by the Bald Rock consists of Fordson tractor with a Meyers winch between the rear wheels on which the sand line is run. The company has a gin hole at each well with short pieces of old rods cut off and driven into the sides of the pole to form steps for a man to climb the pole and hang a sheave at the top through which the sand line is run.



Supt. Alva Davis, Bald Rock Oil Co., Lee County, Ky.

The company also uses a sand pump with the equipment so that rods and standing valves can be pulled and replaced quickly. Formerly, it required two days to reach some of the wells, owing to the "breaks" in the terrain, to get the equipment to the wells with mules and rig up for pulling. Now, with less men, they figure an average of one day to reach the most difficult well, pull the standing valve and get the well back on production. If the wells are not hard to reach, the company can pull three with each tractor.

"It has enabled us to run the wells with less than half the number of men we formerly had," writes a company official, "and the wells are kept in very much better condition. Another thing is the very much lower cost of operating as against mules, just from the feeding standpoint alone. One tractor will displace four mules in that country.

"I cannot imagine any well in a more inaccessible location than some we have in Lee county, but there is not one of them that we have not had the tractor on and pulled and cleaned the well. If the hill is so steep that the tractor will not go up it driving it forward, which often causes it to rear up and fall backwards, we turn the tractor around and back up the hill. If it won't go that way, we take the end of the sand line and run up a hill with it, tie it to a stump or tree and let the tractor wind itself up on the winch.

"We found the tractors to be speedy and sturdy and our repairs on them have amounted to practically nothing in the year or more we have been using them."

CINCINNATI, Sept. 9.—The Davis Welding & Mfg. Co., with headquarters here, will exhibit in spaces 3 and 4 in the New York Bldg. at the Tulsa petroleum exposition, its new Model C 300 gallon three-compartment and 600 gallon three-compartment tank bodies, which include the Davis safety features. The company will also have on display a complete pumping unit which has been developed for use on truck tanks for handling fuel oil, distillate, lube oil, etc. Delivery cans of 5 and 10 gallon capacity of the screw top, push cover and lock cover types, will also be shown.

A close up showing winch on tractor

Texon Well Increases Flow Materially

By Special Correspondent

FORT WORTH, Sept. 6.—Drilling deeper one foot, the Texon Oil & Land Co.'s No. 1 Group 1 well, Reagan county, increased its production by about 400 barrels a day, according to reports from the field Friday. The well was making around 2000 barrels daily, when deepened, production increasing to 100 barrels an hour. The sand was originally drilled from 3022 to 3027 feet.

The Group 2 well of the Texon, one mile due east from the Big Lake No. 11, the field's largest producer to date, will not be drilled in for the present, according to a statement from Frank T. Pickrell, vice-president and general manager of the company. Lack of storage or pipeline facilities is the principal reason for this, it is understood. It is now a little below 2800 feet.

Announcement has been made of six additional tests to be drilled by the Texon company and three by the Big Lake interests, and several other individual tests, any of which would prove important extensions if successful. J. K. Hughes and E. L. Smith and others, who were outstanding operators during the Mexia and Powell developments, are planning a test in the vicinity of the Big Lake No. 11. All of the tests will range in an east or northeast direction from the present production.

Mr. Pickrell this week denied that any acreage sales had been made by the Texon but was noncommittal on the subject of pending negotiations. He said, in connection with the outlook for pipeline connections, that sufficient progress had been made that estimates on the cost of construction of an 8-inch line from Ranger had been called for.

Ranger would be the logical connecting point with North-Central Texas, for practically any pipe line company in the district. No intimation was given as to which company was projecting this extension.

Kentucky Production For July By Counties

LEXINGTON, KY., Aug. 27.—Total production of Kentucky oil fields, by counties, for July as compared with June, is as follows, according to the Kentucky Oil Mens Association:

County	July	June
Allen	36.054.26	34,400.97
arren	10,622.58	9,760.93
Bath	1,559.64	965.02
Boyd		140.96
Cumberland	6,867.08	3,822.90
Elliott	790.68	439.06
Estill	43,524.17	42,802.17
Floyd	1,194.14	1,993.98
Hancock	2,983.80	2,976.54
Hopkins	163.80	1,222.22
Johnson	103,385.12	102,396.62
Knott		617.93
Lawrence	44,452.66	40,397.63
Lee	211,386.88	191,223.16
Magoffin	97,465.93	88,696.91
McCreary	338.67	406.09
Menifee	403.62	65.87
Monroe	7,575.15	1,832,69
Morgan	947.18	819.73
Ohio	8,614.78	7,041.18
Owsley	920.54	1,171.86
Powell	25,526.36	21,223.76
Russell		437.11
Simpson	977.50	1,341.51
Warren	55,252.39	47,664.85
Wayne	11,850.04	11,215.46
Wolfe	5,512.32	4,215.40
Total	678,369.29	619,292.51

Drills Extension Well

SHREVEPORT, Sept. 6.—Charles C. Hummer, Jr., drilling superintendent of the Louisiana Oil Refining Corp. and associated companies, gets his name posted among prominent discoverers as the result of having drilled in and completed the southwest extension to the Cotton Valley, La., field. The completion was made two weeks ago and opened up a mile of new territory.

Chas. C. Hummer, Jr.

Los Angeles Shipments Are Holding Up

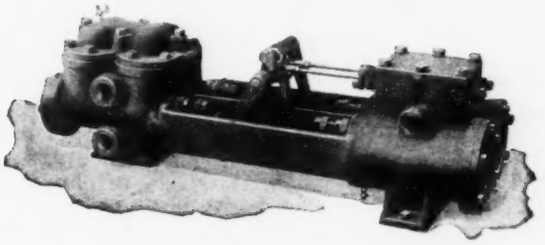
LOS ANGELES, Sept. 5.—Petroleum exports from this harbor during the week ending yesterday amounted to 2,203,889 barrels, approximately the same quantity as that which was shipped during the previous week. The harbor is now exporting petroleum products at the rate of more than 100,000,000 barrels per year.

Last week's shipments went out in 28 tankers, 13 of which were destined for Pacific coast reports, 11 for the Atlantic seaboard, 2 to China, 1 to the Philippines and 1 to the Hawaiian islands. There were 7 loads of fuel oil, 3 loads of gasoline, and 18 loads of crude. The shipments were as follows:

Aug. 23

D. G. Schofield to Richmond, 79,600 barrels crude for Standard Oil Co.
La Purisma to Honolulu, 18,556 barrels gasoline for Union Oil Co.
Agwilake to Bayonne, 95,263 barrels crude for Associated Oil Co.

TRANSIT FIELD PUMPS



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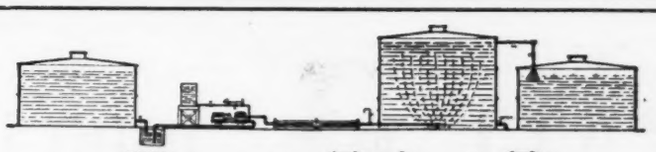

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Cape Ann to Bayonne, 72,103 barrels crude for Cape Oil Co.

Aug. 24.

W. F. Herrin to Avon, 45,000 barrels crude for Associated Oil Co.
Utacarbon to Avon, 78,174 barrels crude for Union Oil Co.
W. S. Miller to Richmond, 74,645 barrels crude for Standard Oil Co.
A. C. Bedford to Bayonne, 119,023 barrels crude for Standard Oil Co.
E. L. Doheny 3rd, 95,249 barrels fuel for Pan-American Petroleum Corp.

Aug. 25

Albert Hill to Philadelphia, 74,516 barrels crude for Sun Oil Co.
Cape Henlopen to Bayonne, 75,109 barrels crude for Cape Oil Co.

Aug. 26

Lubrico to Pt. Wells, 70,000 barrels crude for Standard Oil Co.
Alden Anderson to Avon, 72,000 barrels crude for Associated Oil Co.
Meton to Manila, 59,119 barrels fuel for Standard Oil Co.

Aug. 27

D. G. Schofield to Richmond, 79,600 barrels crude for Standard Oil Co.
J. A. Moffitt to Willbridge, 64,031 barrels fuel for Standard Oil Co.
Los Alamos to Seattle, 35,733 barrels gas for Shell Co.
W. S. Rheem to Richmond, 116,499 barrels crude for Standard Oil Co.
Anatina to Shanghai, 50,000 barrels gas for Anglo-Saxon Petroleum Co.
Adna to North China, 46,800 barrels fuel for Standard Oil Co.
Standard to Bayonne, 110,722 barrels crude for Standard Oil Co.

Aug. 28.

Los Angeles to Martinez, 74,831 barrels crude for Shell Co.
Dilworth to Seattle, 74,000 barrels fuel for General Petroleum Corp.
John D. Archbold for Bayonne, 131,829 barrels crude for Standard Oil Co.

Aug. 29

Utacarbon to Martinez, 75,000 barrels crude for Shell Co.
F. Q. Barstow to Bayonne, 110,000 barrels crude for Standard Oil Co.
E. T. Bedford to Bayonne, 118,992 barrels crude for Standard Oil Co.
Payl H. Harwood to Bayonne, 77,405 barrels fuel for Standard Oil Co.

CENTRAL LAKE, MICH., Sept. 9.—Harry J. Smith has installed storage tanks for gasoline here, and is engaged in retailing and wholesaling gasoline. He also has the Dodge, Flint and Star automobile agency here.

DETROIT, Sept. 9.—The Red Indian Oil Co. opened its $10,000 filling station and another bulk station at Plymouth, Mich., handling Indian Refining Co.'s products exclusively, according to I. B. Dworman, salesman for the Indian in this territory.

California Receipts Low Total Imports Drop

Receipts of California oil (crude and refined oils) at Atlantic and Gulf Coast ports for the week ended Aug. 30 totaled 958,000 barrels, a daily average of 136,857 barrels, against 1,083,000 barrels, a daily average of 154,714 barrels for the week ended Aug. 23.

California Oil Receipts at Atlantic and Gulf Coast Ports
(Barrels of 42 gallons)

	Week ended Aug. 30	Week ended Aug. 23
At Atlantic Coast Ports		
Baltimore	90,000	230,000
Boston	.....	76,000
New York	713,000	702,000
Philadelphia	80,000	75,000
Others	75,000	.....
Total	958,000	1,083,000
Daily average	136,857	154,714
At Gulf Coast Ports	.....	.....
Total Atlantic and Gulf Coast Ports	958,000	1,083,000
Daily average	136,857	154,714

Imports of Petroleum at Principal United States Ports

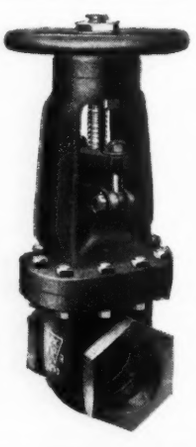
According to figures collected by the American Petroleum Institute imports of petroleum (crude and refined oils) at the principal ports for the week ended Aug. 30 totaled 1,619,000 barrels, a daily average of 231,286 barrels, compared with 1,945,000 barrels, a daily average of 277,857 barrels for the week ended Aug. 23.

(Barrels of 42 gallons)

	Week ended Aug. 30	Week ended Aug. 23
At Atlantic Coast Ports		
Baltimore	60,000	125,000
Boston	125,000	.....
Philadelphia	109,000	45,000
New York	306,000	311,000
Others	276,000	470,000
Total	876,000	951,000
Daily average	125,143	135,857
At Gulf Coast Ports		
Galveston district	403,000	512,000
New Orleans and Baton Rouge	122,000	383,000
Port Arthur and Sabine district	198,000	54,000
Tampa	20,000	45,000
Total	743,000	994,000
Daily average	106,143	142,000
At All U. S. Ports		
Total	1,619,000	1,945,000
Daily average	231,286	277,857

NOTE:—Figures are presented for the week ended Saturday morning so as to conform with period covered by the Institute report of estimates of daily average gross production. Figures are subject to revision each week. They are complete for all principal ports where foreign mineral oil is imported.

PRATT & CADY



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Dunkirk, N. Y., Well Is Still Making Oil

BUFFALO, Sept. 6.—The performance of a well drilled about six miles southwest of Dunkirk, Chautauqua county, N. Y., has attracted much attention from oil and gas operators and doubtless will lead to considerable drilling in the effort to open an oil field.

The well was drilled by the Republic Light, Heat & Power Co., a Cities Service Co. subsidiary. It found production in the bottom of the Flint horizon at about 1500 feet and had initial production of two million feet of gas and 200 barrels of oil. The gas was no surprise, as this lake shore area has been under development for years and has produced important quantities of gas from the Medina horizon, which is several hundred feet lower than the Flint.

The present status of the well is that it is making about one and one-half million feet of gas and spraying 40 barrels of oil. The gravity of the oil is 36. The operators say that they cannot estimate at this time what the well will amount to but that the oil discovery is unusual for this district. Rock pressure at time of driling in was 590 pounds.

The well is in Sheridan township and the Republic company holds extensive leases throughout the area.

Second Field Proven In Moffat County

DENVER, Sept. 9.—Midwest Refining Co.'s No. 1 French in 22-4-92, Iles dome, Moffat county, Colo., is in for a producer in the Dakota sand and establishes the second field in that part of the state. It found the Dakota at 2636 feet and is flowing at the rate of 50 barrels an hour.

Several weeks ago the Hogan well on the north flank of the same structure found water in the Dakota at 3360 feet but logs show it to be 700 feet down on the flanks of the dome.

The Midwest well has been drilling in oil the past two weeks, this oil coming from the shale above the sand and testing 37 gravity, indicating that the well would be a large producer of high grade oil. The oil from the sand is officially stated to be of 22 gravity, indicating that it may be dead oil, as it is of paraffin base. The sand is estimated to be 70 to 125 feet thick and the Midwest expresses the belief that it is saturated to the bottom. The hole is 15 feet in this sand and officials estimate production at 1000 barrels a day. Tentative locations have been made for seven additional wells.

DES MOINES, Sept. 9.—Iowa Independent Oil Men's Ass'n. will meet at Russell Lamson Hotel, Waterloo, Ia., Sept. 18, 19.

12,856

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IN THE MAILBAG

Tip From A Salesman

A PROGRESSIVE oil company salesman sends in a tip which others may already be following, for all we know. This man says he reads and studies carefully the articles in N. P. N. on service station construction. Then, when he finds a company on which he calls to sell goods is contemplating building new stations, he is ready to give them suggestions and advise as to what other companies are doing in up-to-date practice.

We'll wager this man is a corking good salesman. When a man has the interests of his customers so much at heart he's bound to benefit in return. He's learned the philosophy that much business is done on the trading basis. If you can give a man something that is of value to him he is much more likely to place an order with you than when you simply approach him with a price list in hand.

Difference In The Point Of View

RALPH L. SKINNER, manufacturer of a device to prolong the life of motor oil by distilling off the light ends that dilute it while the engine is running, believes N. P. N. did his device an injustice in an article in the July 28 issue in which the belief was stated that motor lubrication troubles could be reduced vastly if oil companies and automobile manufacturers joined in preaching the maxim, "Change Your Oil Every 500 Miles."

We had no intention to injure Mr. Skinner's business. His device was not condemned. It was only incidentally mentioned as one of the mechanical moves being made toward reducing the crankcase dilution evil. His device may be the ultimate answer. But it is new. A few car manufacturers have adopted it but it is not immediately available to the millions of American motorists. It may be 100 per cent what is wanted. If it is, undoubtedly it will eventually be standard equipment on every car turned out.

Until that time, however, we think preaching the gospel of changing oil every 500 miles will bring great benefit to the motorist. He can do it at little expense and start immediately.

True Perspective For Inventories

W. FREDERICK SUENDER, petroleum economist and statistician, of New York, for a long time, to the writer's knowledge, has been bringing to the attention of the oil industry the fact it was fooling itself badly by estimating stocks in terms of number of days' supply at the current rate of consumption.

Getting an impulse perhaps from recent editorial comment in N. P. N. on this subject, Mr. Suender calls our attention to a new basis of comparison to show a true relationship of stocks to production and consumption. He compares production and consumption to two trains, starting at different points on the same road, but moving in the same direction, with the distance between them as inventory, or stocks. The train in the rear, he calls it consumption, may be moving quite a bit faster than the one in front, production; but still it will take it a long time to catch up.

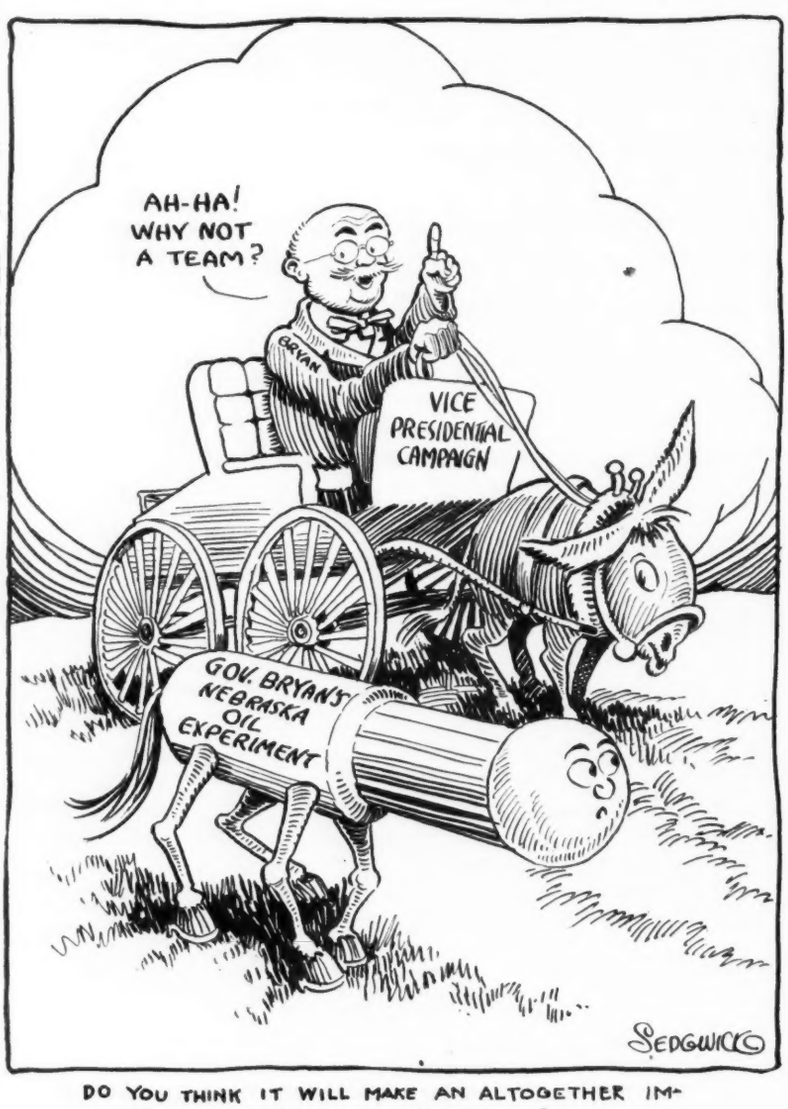
"If, then, we had 351 million barrels of crude inventory on hand, and consumption were 1 million barrels a month greater than production, it would take the reasonable time of 351 months, or nearly 30 years, before we were on a hand to mouth basis. That is to say, the trains might meet eventually somewhere south of the equator," he goes on to say.

"The fact that domestic production was 61 million barrels in July is entirely immaterial; the pertinent thing is that consumption for the year ending August 1st was at 98 per cent.

"This 2 per cent has a twofold significance; burden placed upon present economic value, and as a residue deposit which will be a serious factor in future consumption.

"The second train must attain a speed of 102 before arriving at a point equal to August 1st, 1923.

"Progress is not measured by comparing a thing with itself, but by comparison with other things having the same incentive!"



DO YOU THINK IT WILL MAKE AN ALTOGETHER IMPRESSIVE APPEARANCE, GOVERNOR?

THE EDITORS' VIEWPOINT

Distinct Loss To The Industry

IT IS unfortunate that the Western Petroleum Refiners Association has found it necessary to discontinue its weekly statistical service which reported the condition of stocks, production and shipments of refined products in the Mid-Continent. The industry as a whole will be distinctly the loser.

Right now when the Mid-Continent refiner appears to be operating on a sane basis with resulting improvement in market conditions, it is perhaps a greater blow than if it had fallen at some other time. Unable to keep his finger on the pulse of the manufacturing industry in the southwest, it is quite possible that the refiner may lose much of the advantage he has gained through accurate current knowledge in recent months.

In September, a year ago, the association began its work of gathering statistics receiving reports from about 45 plants. More and more refiners began to co-operate until in November the weekly report may be said to have become representative of the field.

Since November, 1923, the Mid-Continent refiner has kept his stocks of gasoline at a lower point every month than in the corresponding month the year before. Although there has been an excellent increase in consumption of gasoline as represented by shipments from southwestern refineries, these plants have kept their runs of crude below the level maintained a year ago during the entire period.

A year ago Mid-Continent refiners were almost literally cutting each other's throats in an effort to sell gasoline before winter caught them with their tanks full and no demand. New Navy gasoline was selling freely at around 6½ to 6¾ cents per gallon. Every refiner feared that his competitors had as much or more gasoline in storage and no one knew accurately how rapidly reserves were being depleted or what prospects there were that demand would be sufficient to work stocks down to a reasonable level before cold weather.

Today the crude situation is just as acute. Distributing markets are demoralized and crude cuts are undoubtbedly just around the corner.

But markets are in a vastly different position. The Mid-Continent refiner knows that he as well as his competitors have been depleting their gasoline storage steadily every week since early in May. They know that stocks are at a reasonable level and instead of cutting prices in a panic, refiners are advancing their quotations.

The pessimistic refiner points out that crude runs for the Mid-Continent have been increased during recent weeks. That is true. It is true of refiners who have exhausted their reserves already and must run more crude to supply their customers. The larger interests which are still holding considerable gasoline in storage and are able to meet the demands made on them, are not increasing their still charges to any marked degree. Increases have been made to meet particular conditions.

In 1923, the Mid-Continent refiner operated in the dark and met disaster which left a number on the shoals of bankruptcy. It is generally admitted that operations were unwise last year.

During 1924 the Mid-Continent refiner has had a light to chart his course and he is now reaping the benefits.

Are crude runs lower today than they were a year ago, are gasoline stocks lower because of the accurate weekly information refiners have had? If not, what has been the reason?

It has been stated that the plants which passed out of the picture through last year's disaster have caused the smaller production. That statement is undoubtedly made without a study of the facts. There are five fewer plants in operation today than there were a year ago. Aside from the Indiahoma in Oklahoma and the Sterling in Kansas none is important. As a matter of fact, the operating plants are virtually all charging less crude to their stills than they did last year.

The statement has been made that the Independents have been restrained from running more crude and have kept their stocks lower than last year because of a lack of finances.

Depression this year and last has not been confined to the Mid-Continent. Refiners in all districts have been in the same boat. And yet statistics of the Bureau of Mines show that Oklahoma and Kansas refiners are the only ones who have been consistently running less crude than last year. They are the only ones who have reported lower stocks of gasoline every month than on the corresponding month a year ago.

If the reason has been a financial one why have not all other refining districts been in the same situation? Why have not the other districts kept their runs low and worked their stocks?

The conviction is unescapable that the Western Petroleum Refiners Association statistical service has been of incalculable value to the industry. A number of refiners who formerly doubted the wisdom of the bulletins have been converted. Critics of accurate statistical information are fewer every year.

Some method should and must be found by which the industry can have accurate information on a current basis. Both buyer and seller can then protect his own interests and the public will be protected from extreme fluctuations in the price it must pay for petroleum products.—J. C. C.

An Income Tax Exhibit

THE recent visit to Tulsa and other Mid-Continent points of several representatives of the Oil and Gas section. Income Tax Unit, of the United States Treasury department, was a notable step forward in the creation of more friendly relations between oil men and those government officials whose unpopular job it is to collect that portion of oil incomes that is supposed to flow into the government's coffers. These men, all engineers, and practical oil men, enjoying wide acquaintance in the industry, came out for the purpose of broadening their acquaintance still farther, and of establishing as many friendly points of contact as possible within a short time.

In view of the fact that to the average oil man, the workings of the income tax officials are hidden behind a screen of red tape and mystery, from which he usually expects to get nothing better than the worst of it, it is highly desirable that closer relations be established. More intimate contact would add to the respect and lessen the distrust that each holds for the other in their income tax dealings.

Why wouldn't it be a good idea for the Treasury Department to put in an exhibit at the Petroleum Exposition, showing the workings of the Income Tax unit? Capable men in charge could explain to all who might be interested in the methods used in computing and assessing income taxes, and in their discussions could undoubtedly smooth out many difficulties for the oil man in making out his return, while at the same time cementing more friendly relations between him and the department.—A.F.H.

A Good Looking Filling Station Deserves a Good Looking Pump

You can't expect best results from the money which you have invested to give your filling station a good appearance, *unless* you take pains to see that the gasoline pumps and lubrication outfits are good-looking, too.

Bowser has specialized a good many years in making sure that gasoline and oil outfits are good looking and attractive to the eye of the passing motorist.

The reason you insist on having your filling station grounds kept neat, and the station building itself kept painted is an argument in behalf of Bowser pumps and tanks.

S.F. Bowser & Company, Inc.

FORT WAYNE, INDIANA.

Sales and Service Offices and Representatives Everywhere

HERE AND THERE

W. H. Wortham, formerly identified with the Sinclair interests in Texas and Mexico, who afterwards operated a jobbing business at San Angelo as the Independent Oil Co., is one of the familiar figures in the Tom Green county, Texas, capital. Having spent a large part of his life in the "cow country" he is widely known among the west Texas cattlemen and is peculiarly fitted for the handling of leases, which he now is doing. Mr. Wortham and Frank E. Miller, the latter widely and favorably known in the San Angelo region, are the principle lease traders active in the territory outlying from Reagan county oil development.

* * *

M. L. Freese, vice-president of the Altitude Petroleum Co., Tulsa, who has been under the weather for three or four weeks, is now again enjoying his usual good health. Mr. Freese is on the road at present renewing old acquaintances in the trade in the middle western states and will be gone on his trip until about the first of October, according to Jesse Finston, secretary and treasurer of the company.

Mr. Finston reports that his company has enjoyed phenomenal business during July and August and from every indication, expects a continuance of the same.

* * *

Arthur Anson, president of the Altitude Petroleum Co., Tulsa, has returned to the Chicago offices of the company from a trip through Ohio, New York and Canada. Mr. Anson reports business very good, demand unusual, and the future in his territory looking very bright, according to Jesse Finston, secretary and treasurer of the company.

* * *

E. J. Fischer, formerly associated with the Transcontinental Oil Co. at Coraopolis, Pa., has become manager of the Robinson Oil Co., Coraopolis, jobbers. The company is branching out into the jobbing of factory and house paints which will be marketed under the name of Rocolastic and R. H. P.

* * *

H. G. Ridley, assistant sales manager of the Imperial Oil Marketing Co., Tulsa, is spending his vacation at Oil Springs, near Ardmore, Okla. "A good place for an oil man to vacate" is the comment of J. R. Trisler, vice-president of the company.

* * *

Clark Kendrick, president of the Kendrick Oil Co., Tulsa, left on Aug. 30 on a six weeks' motor trip to the east by way of Canada and through the White mountains.

C. L. Mayhall, president of the Imperial Oil Marketing Co., Tulsa, has returned from a five weeks' trip to Santa Monica, Cal., where his family is spending the summer.

While in California, Mr. Mayhall took time to look into the oil business on the coast and is of the opinion that California will not come into competition with Mid-Continent oils again unless something new is brought in.

Frank W. DeWolf

Frank W. DeWolf, of Dallas, chief geologist of the A. E. Humphreys interests, operating in Texas as the Boyd Oil Corp., is spending his vacation in the Rocky Mountain region.

Before locating at Dallas with the Humphreys interests, Mr. DeWolf, who is widely recognized in the geological profession, was connected with the Illinois State Geological Survey and the University of Illinois.

* * *

B. E. Hannon, formerly manager of The Texas Co. at Kansas City, Mo., resigned that position to become lubricating engineer for the General Petroleum Co. at Los Angeles.

* * *

R. P. Williams, Southern sales manager of the Galena Signal Oil Co. of Houston, Texas, is back on the job after a vacation period spent in Florida and eastern territory.

* * *

Thomas E. Elliott, treasurer of the Diamond Refining Co., Tulsa, is vacationing at Bella Vista, Ark.

J. M. Brewster, formerly sergeant in the U. S. marines, and now supervisor of service stations of the Fordney Oil Co., Saginaw, Mich., recently married Miss Mary Habbeler. It is reported that the wedding was celebrated in proper marine style and later reports indicated "light skirmishes," according to G. E. Hunt, chief clerk of the company.

Mr. Brewster's military record began with his enlistment in 1916, he serving a large part of his enlistment period in the Dominican Republic, where he served for a time in the Brigade Headquarters detachment commanded by Captain Fordney, now manager of the Fordney Oil Co. Mr. Brewster is now back at the office after a three weeks' wedding trip which was made by motor through northern Michigan.

* * *

C. F. Johnson, one of the oldest men from service standpoint connected with the refining division of the industry in north Texas, has become associated with the American Refining Co. at Wichita Falls. Mr. Johnson at one time was with the Wichita Valley Refining Co. at Iowa Park and later helped to organize and was an officer in the Lone Star Refining Co. of Wichita Falls.

* * *

Edward G. Delany, who has been employed for 11 years at the Ford Motor Co.'s Highland Park plant as a free lance gear foreman, has left the automobile business to enter the oil industry as city salesman at Royal Oak, Mich., for The Texas Io. The oil business, Mr. Delany says, is more to his liking.

* * *

Walter E. Harrington and P. O. Forbes opened their Blue Bird service station at Greenville, N. C., on Aug. 23 and report excellent business. The station has three drives and cost approximately $12,000. Products of the Standard Oil Co. of New Jersey are bought in tank car lots.

* * *

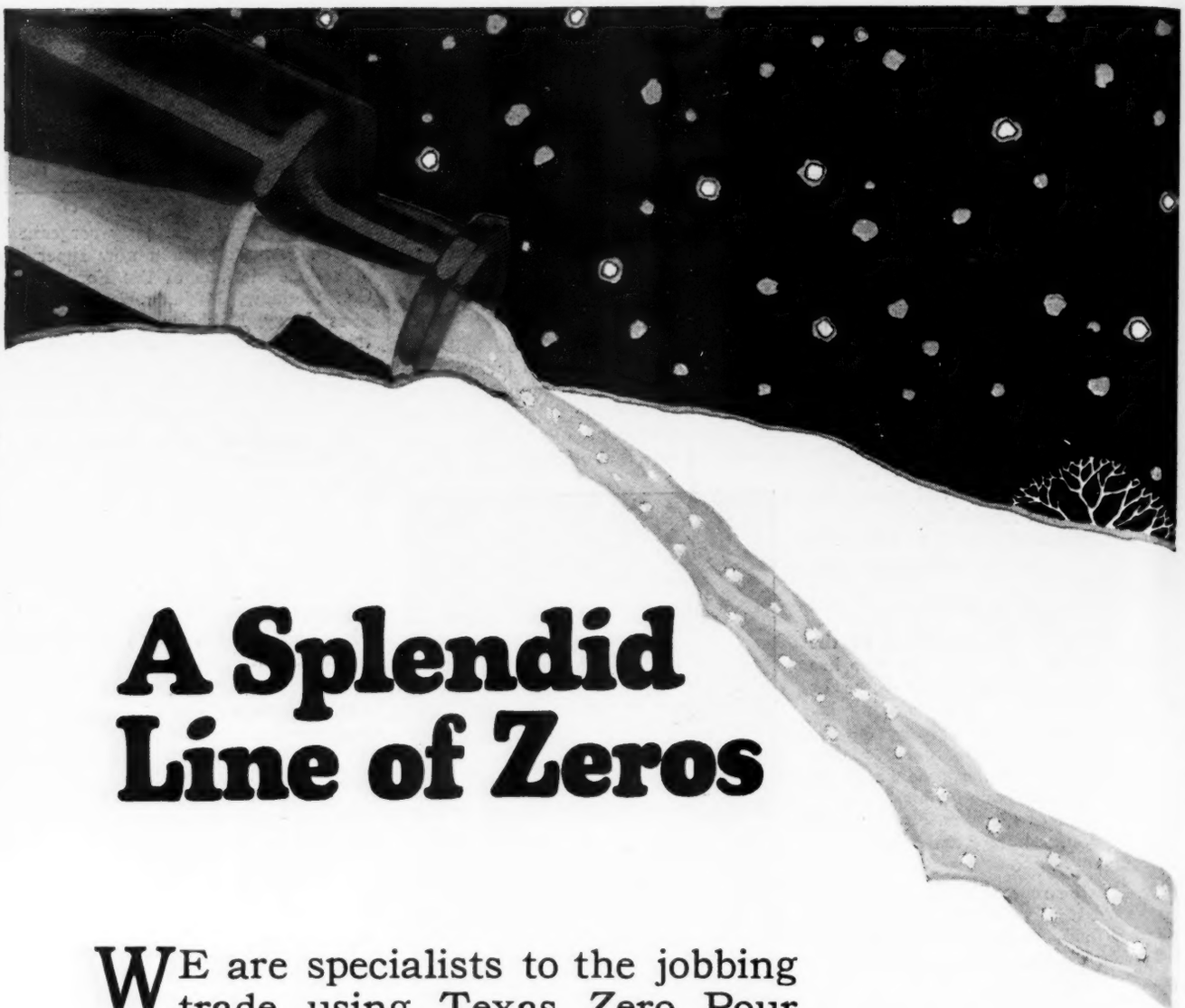
A. F. Anding has recently been appointed supervisor of the service stations in Dallas of the Cities Service Oil Co. Mr. Anding formerly was with the company auditing department. C. F. Hurst, who has been station supervisor, has been made city salesman.

* * *

W. T. Leslie, formerly superintendent of the Yonkers, N. Y. distributing plant of the Pure Oil Co. is now with the Sinclair Refining Co. as their representative in the same territory.

* * *

W. F. Jones, assistant secretary of the Roxana Petroleum Corp., sailed Sept. 3 on the Berengaria for Europe where he will spend his vacation.



A Splendid Line of Zeros

WE are specialists to the jobbing trade using Texas Zero Pour Test Lubricating Oils. Our oils made only from highest grade selected crudes. Our refining plant embodies the most modern facilities and equipment obtainable. We list among our clientele some of the largest and most discriminating buyers of lubricating oils in the country.

Permit us the pleasure of quoting you in small, large or compartment cars on the grade you use. Samples, specifications and prices will be gladly furnished upon request.

If Winter Comes

ELLIOTT JONES & CO. INC.

REFINERS OF PETROLEUM

SAN ANTONIO · TEXAS

New Vacuum Refining Process Makes Narrow Cut Lub Oils

By Paul Truesdell

STAFF REPRESENTATIVE

CHICAGO, Sept. 9.

VACUUM distillation is the keynote of a process of manufacturing lubricating oils that has been worked out during the past three years and a half at a refinery at Burnham, Ill., a short distance out of Chirago.

The process differs radically from any method generally known in present practice and apparently marks an important step in the development of the refining art.

It consists chiefly in distilling topped crude, the fractions below the gas oil cut, under a high degree of vacuum—29.9 inches—at comparatively low temperature, say 630 F. and obtaining a product which, it is claimed, meets and betters specifications of lubricating oils made by steam distillation, acid and soda treatment and filtering.

Five chief advantages are claimed for the new process over the present methods of manufacturing lubricating oils:

Advantages Claimed

1—It is simple, operating costs are low and losses are at a minimum.

2—It obtains a high yield of excellent lubricating oil, including high viscosity grades comparable to cylinder stocks, entirely by overhead distillation from cheap, low grade crude—Smackover for example, or any heavy crude at 14 degrees Be. gravity.

3—It eliminates acid treatment and filtering entirely, thereby reducing costs, losses, and doing away with the nuisance of handling the acid sludge.

4—It produces "narrow cut" oils, that is oils whose range of viscosity and boiling point is within much narrower limits than in the case of oil manufactured by other processes, and combining a very high flash and fire test with a zero cold test.

5—It produces oils of excellent color which remain stable under heat because the unsaturated compounds and sulfo-acid bodies that it is said to be impossible entirely to remove from oils treated with acid and soda are present, if at all, in greatly reduced amounts.

Inventor of Process

John E. Schulze is the inventor of the process and the rights to it are owned by the Red River Refining Co., Inc., of Shreveport, with offices in the Chicago Temple building, Chicago. It is this process that has been installed at the plant of the Deepwater Oil Refineries Inc., Houston. That installation was described in the July 16 issue of National Petroleum News. The process has also been licensed to the Sun Oil Co., which has installed eight vacuum tills at its Marcus Hook plant, four of which are understood to be in operation.

Exclusive sales rights to the products made at the Red River plant at Burnham are owned by the Calumet Refining Co. with offices at 4323 So. Western Blvd., Chicago. The Calumet company has been selling the limited output of the Burnham refinery to the jobbing trade for about a year. New construction recently finished brings the capacity of the plant up to about 1000 barrels a day.

Every refiner knows that one of the greatest problems confronting the manufacturer of lubricating oil is to prevent the cracking of the oil in the still and the conequent formation of unsaturated compounds and light fractions. There are three things that tend to cause cracking. One is high temperature, another is refluxing of material that may condense in the vapor line into the still and another is local overheating of the bottom of the still.

The use of steam in lub stills to hold down the boiling point of the oil below the critical cracking temperature is the method generally used by refiners to prevent cracking.

Drawbacks of Steam

According to Mr. Schulze, however, the use of open steam does not entirely accomplish its purpose and has other bad features which his process avoids. The ordinary lubricating oil still has a

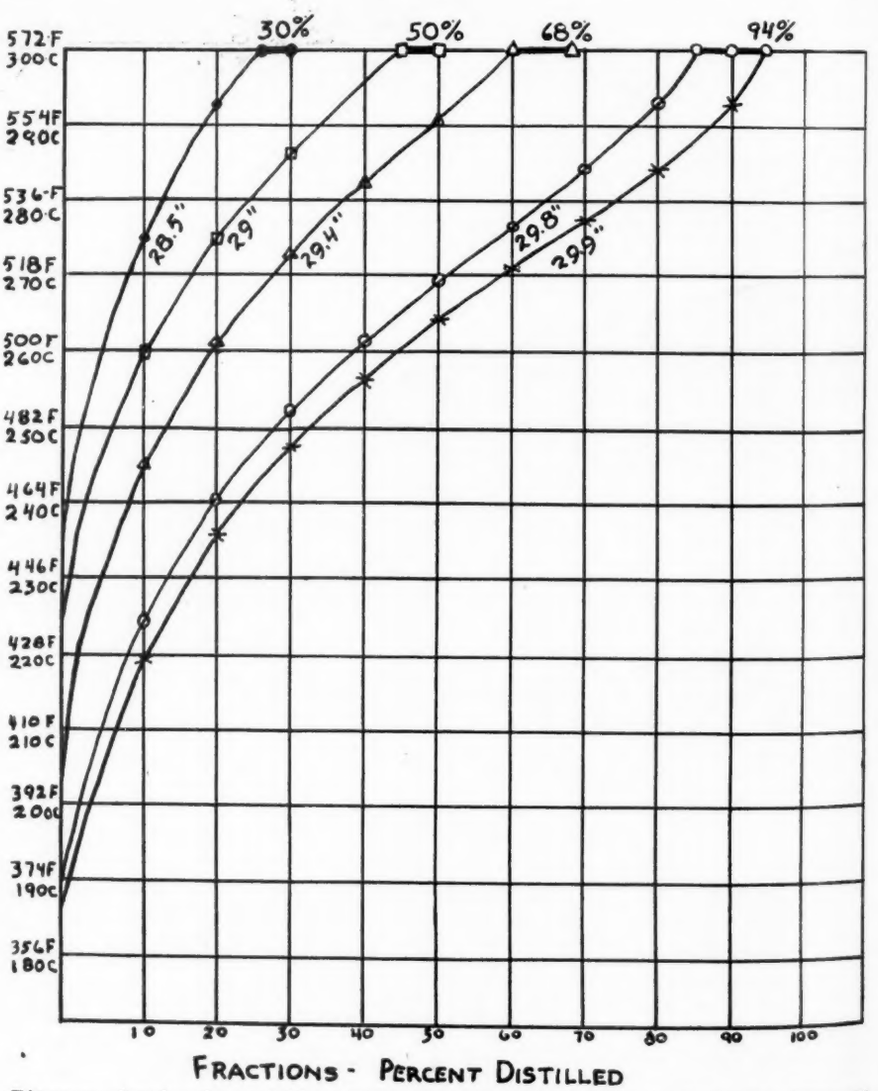


Diagram showing how yield of lubricating oil recovered proceeds by big jumps as the degree of vacuum pulled increases by small jumps. The percentage figures at the top indicate per cent of yield and the figures on the curves indicate inches of mercury

conventional vapor dome and a vapor line slanting upward from the still. The vapor line usually is not insulated and the result is that some of the vapor condenses in the line and runs back by gravity into the mass of oil in the still.

This produces cracking of the oil. In fact, one of the features of the Burton cracking process for making gasoline is a large section vapor line, slanting steeply upward from the still, which promotes condensation of the heavy ends of the vapors and their reflux into the still.

Also, when open steam is blown into a still it creates considerable turbulence and, in seeking an outlet through the vapor dome, the steam picks up mechanically droplets of oil which it carries over in a liquid state. Trouble is often experienced also from emulsification of the oil, due to the commingling of the steam and oil vapors.

According to Mr. Schulze, his process avoids all of these drawbacks.

The new equipment at his plant, aside from the experimental units that were used in developing the process, consists of three 320-barrel stills. These are nine feet in diameter by 30 feet long with welded seams and dished heads. They are braced inside in the same manner as the stills described and illustrated with a photograph in the July 16 issue of this paper in connection with the Deepwater installation.

Stills Are Suspended

Instead of resting on the brickwork of the still setting, where the weight is likely to result in buckling and cracking of the walls, the stills are suspended from overhead structural steel supports.

The design of the furnace differs from ordinary practice. It is heated by two oil burners but instead of placing the burners in the usual fashion in the center of the face of the furnace where the flames shoot directly out into the combustion chamber and against the fire sheet of the still, they are placed one on either side of the furnace.

The flames from the burners shoot into tunnels on each side of the furnace. These tunnels, 18 by 24 inches, run the entire length of the furnace and still and connect with flue and stack.

They are built of fireproof cement with perforations along the sides. The flat tops of the tunnels also are perforated with oblong holes just big enough so that each may be covered by a fire brick laid on top of it. As the flame traverses the tunnels, the heat is radiated through the holes into the furnace under the still. This method keeps the flame from striking the fire sheet which would cause local overheating, cracking of the oil and early failure of the still bottom.

When the furnace in a new installation is started, all the holes in the tops of the tunnels are closed with fire bricks and draft is regulated by removing a sufficient number of bricks to give efficient combustion. The entire furnace is lined with a thick layer of fireproof cement which is pounded into place while in a damp, coarse powdered form and hardens to the hardness of concrete.

Instead of having a single vapor dome as most lub stills have, the Schulze stills each have 10 of large size, spaced at equal distances along the top of the still. Each of the vapor lines is insulated heavily and slants downward from the still instead of toward it, thus making reflux impossible. The joint from the upright to the horizontal part of the line is a square elbow, discouraging condensation by offering less surface than a rounding joint.

The purpose of insulating the vapor lines also is to prevent condensation. The vapor lines run to the condenser where each is connected through a reduction with its own four-inch coil which is cooled by water in a conventional condenser box. Due to the fact that no light cracked products are carried over, a cooling surface of only about half the size needed for the usual lub still is sufficient.

The light ends, being nearer the temperature of the air, are more difficult to condense. Mr. Schulze has found that each of the vapor lines carries an equal quantity of vapor.

The purpose of having a number of vapor lines is to offer the easiest and most direct outlet possible to the vapors, thereby preventing the turbulence in seeking an escape that causes cracking of the oil. Concerning cracking in the manufacture of lubricating oils, Mr. Schulze says:

"Cracking produces both light and heavy products. The light products pass over and are condensed with each of the successive cuts or fractions, thus increasing the range of viscosity and boiling points of each cut. Moreover, some of the cracked products give the oil a dark color and a bad odor and on this account it is necessary to get rid of them by expensive and time-consuming treatment with sulphuric acid, neutralization, washing and filtration."

Not only due to the fact that he prevents practically all cracking and carrying over of entrained oil, but also to the fact that he makes his cuts on the basis of viscosity instead of on the basis of gravity, which is the method used in general practice, Mr. Schulze attributes the fact that he gets products having a narrower range of viscosity than is usual in other oils.

How Process Works

Vacuum lines connect the stills, through six horizontal internally braced rundown tanks, to an electrically driven 25 by 18 two-stage single cylinder dry vacuum pump. Any tank can be cut out of the system at any time and the vacuum released.

Using the residue from a low grade crude, Mr. Schulze uses a simple and inexpensive process to neutralize the organic acids it contains. Then it is charged into the still—240 barrels constituting a charge in a 320-barrel still. The stills are equipped with special apparatus by means of which the uncondensible gases, and other harmful organic compounds are withdrawn and separated during the distillation. Running down of a 240-barrel charge takes about 18 hours.

Although most of Mr. Schulze's work has been done on asphalt or naphthene base crudes, he says that his process would be equally adapted to handling topped Pennsylvania crude. The wax, however, would have to be removed before the oil was charged into the vacuum still, probably by centrifuging.

The charge is heated close to the initial distillation temperature, about 300 F., before the vacuum is applied. The pressure is reduced, Mr. Schulze says, "to below five millimeters of mercury absolutely pressure and most desirably is reduced to from 1 to 1.5 millimeters (the latter representing 29.9 inches of vacuum).

"As low a pressure as this is obtainable where the oil is free from moisture and operation at 2 to 4 millimeters is practically always feasible. This assumes, of course, the employment of an absolutely tight system.

Temperature is Watched

"The temperature of the oil in the still is under observation at all times by means of a pyrometer so located that the thermo-couple is within an inch or so of the bottom at a central point in the still.

"As soon as distillate begins to come over a sample is taken and its viscosity, flash and fire points are accurately determined. The distillation is continued, samples being taken at intervals until the increase in viscosity indicates the desirability of cutting the distillate into a second receiver. For example, if it is desired to make spindle oils, the first cut can be made when the distillate shows a viscosity of 100 seconds Saybolt universal at 100 F. The pressure in the first receiver may then be released and the first cut, spindle oil, pumped to storage.

"The procedure is substantially the same for the remainder of the distillation, the pressure being maintained at around 1 to 1.5 millimeters or at any rate below 5 millimeters for the best results, and the distillate being cut for the desired fractions in accordance with the increase in viscosity as determined by testing samples at frequent intervals.

"Products aggregating from 80 to 95 per cent of the volume of the topped crude originally charged into the still may be obtained as straight overhead distillate. The residue left in the still is a flux oil of around 12 to 14 Be. gravity. The final distillation temperature should not ordinarily be allowed to exceed 620 or 630 F. maximum. Under these conditions cracking or formation of coky products is entirely avoided." This flux oil is easily pumped out of the stills.

Contrasting his process with the usual method of making lubricating oils, Mr. Schulze says:

"It should be borne in mind," says Mr. Schulze, "that in the usual method

of obtaining lubricating oils up to viscosities of only 750 seconds at 100 F., distillation temperatures of 750 and 800 F. and higher are employed which, of course, causes extensive cracking and gives dark colored oils which must be acid treated and filtered to render them fit for use.

"In my process, on the other hand, lubricating oils of viscosities as high as 150 seconds at 212 F. may be distilled over at around 575 to 600 F. and as high as 170 seconds at 212 F. at around 600 to 620 F., this latter being approximately the endpoint of the kerosene cut in ordinary distillation at atmospheric pressure."

In order to make a comparison of the characteristics of products made by his products as compared with the other processes, Mr. Schulze distilled samples of his own oils of light, medium and heavy grades and samples of corresponding grades of the best oils on the market under a pressure of 1.5 millimeters and prepared the following table which shows the narrow range of viscosity and flash and fire between the fractions of his products as compared with the other oils.

The table follows:

	Prior oils		Schulze narrow cut naphthene base
	Paraffin base	Naphthene base	
Light Oil			
Gravity Baume	30.0	21.0	21.0
Flash (°F.)	405	320	360
Flash range (°F.)	290 to 550	250 to 460	340 to 380
Viscosity at 100°F. Saybolt universal (sec.)	190	200	200
Viscosity range (sec.)	60 to 600	60 to 2000	100 to 300
Color N. P. A.	2½	2¾	1¼
Pour test (A. S. T. M.) (°F.)	30	Below zero	Below zero
Initial boiling point at 1.5 mm.(°F.)	374	320	400
Per cent distilled over up to 450°F. (1.5 mm.)	10%	60%	98%
Medium Oil			
Gravity Baume	29.0	20.5	20.5
Flash (°F.)	425	330	380
Flash range (°F.)	300 to 550	255 to 480	370 to 430
Viscosity at 100°F. Saybolt universal (sec.)	260	300	300
Viscosity range (sec.)	70 to 1400	60 to 2200	300 to 450
Color N. P. A.	3½	3	2
Pour test (A. S. T. M.) (°F.)	35	Below zero	Below zero
Initial boiling point at 1.5 mm. (°F.)	410	350	435
Per cent distilled over up to 475°F. (1.5 mm.)	22%	46%	98%
Heavy Oil			
Gravity Baume	28.5	19.5	19.5
Flash (°F.)	435	360	400
Flash range (°F.)	305 to 550	260 to 510	385 to 450
Viscosity at 100°F. Saybolt universal (sec.)	365	500	500
Viscosity range (sec.)	75 to 1000	70 to 2400	400 to 700
Color N. P. A.	5	3½	2½
Pour test (A. S. T. M.) (°F.)	35	Below zero	Below zero
Initial boiling point at 1.5 mm.(°F.)	437	390	440
Per cent distilled over up to 500°F. (1.5 mm.)	35%	56%	98%

"The table is self-explanatory," says Mr. Schulze, "but it should be noted in connection with the figures given for the per cent of the sample distilled over up to the maximum distillation temperature mentioned, that the figure of 98 per cent for the new oils signifies that substantially the entire sample distilled over, the deficit of 2 per cent representing the unavoidable mechanical loss of oil in handling the sample in conducting the test.

"It is also to be understood that the figures for flash range and viscosity range represent the flash points and viscosities of the first and last 10 per cent fractions, respectively obtained by distilling a sample of the oil at a pressure of 1.5 millimeters mercury absolute.

A five gallon sample of vacuum distilled oil was submitted to the bureau of aeronautics of the navy department for tests as to its value for winter use in airplanes. The report of the bureau, signed by the chief chemist, follows:

Sample of Aviation Oil as Submitted by The Calumet Refining Co., Chicago.

Specific gravity at 60/60 Deg. F.	0.939
Degrees Baume	19.13
Flash point, open cup, Deg. F.	425
Fire point, open cup, Deg. F.	480
Pour point, Deg. F.	5
Viscosity, Saybolt, at	
100 Deg. F.	1660
130 Deg. F.	501
210 Deg. F.	78
Color of oil	Pale filtered (light straw color)
Mineral acids	None
Free alkali	None
Organic acidity as acid number	0.09
Saponifiable oils	None
Matter insoluble in 88 Deg. Be. gasoline	None
Free Sulphur or corrosive sulphur compounds	None
SO_3 as sulphonates	None
Total sulphur, per cent	0.22
Per cent soluble in concentrated sulphuric acid (unsaturated compounds)	16
Emulsifying constituents with steam	None
Carbon residue, per cent, (Conradson method)	0.05
Nature of carbon residue	Stain on crucible
Ash	None
Evaporation loss, per cent (5 grams for seven hours at 235 Deg. F. in electric oven	None
Nature of oil	Mineral
Non-emulsifying properties when tested according to the navy emulsion test at 180 Deg. F. Settled out completely in minutes from end of stirring period.	
With distilled water	8
With 1 per cent salt solution	10

Discussion

"The sample of oil as supplied by the Calumet Refining Co. is a straight run mineral oil made from asphaltic base crude. The oil is as bright in color as the navy's east coast contract light force feed and motor cylinder oil. For a lubricating oil of its viscosity it is the brightest oil in color that has ever come to the attention of this station. This oil is also remarkable for its low content of carbon residue. It is probable that this oil has been distilled from a heavy crude under high vacuum."

"The total sulphur content and per cent of unsaturated compounds of the oil are considered as very low and its non-emulsifying properties with fresh and salt waters are excellent."

"The oil is very satisfactory in all of its properties for use as a winter aviation oil."

Various other investigators had worked on the vacuum refining problem before Mr. Schulze tackled it but none had been successful in perfecting a workable commercial system, he says. The failures of earlier attempts were due, chiefly, he says, to inability to reduce the pressure low enough to give the desired results. That is, inability to pull a sufficient degree of volume on the system. This arose chiefly from the difficulty of making the system absolutely air-tight.

Mr. Schulze encountered many difficulties in doing this in his system. For instance, a manhead on the still that is tight enough to hold the hot oil is by no means tight enough to exclude the air when a high vacuum is pulled on the still.

He had to design a special type of gasket to make the manheads absolutely tight, and new fittings for various connections. Also he says, he was unable to get complete information on the strength of steel necessary in a still to withstand the stresses imposed by high vacuum and had to work it out for himself by endless experiments. The same was true of a number of phases of his process.

Other investigators mostly had tried steam with vacuum and Mr. Schulze's first efforts included use of steam also, but he later discarded this as unnecessary and undesirable. So important is the difference in results obtained by increasing the degree of vacuum even one-tenth of an inch that Mr. Schulze's patent No. 1,448,709, issued March 13, 1923, only covers distillation at pressures below 25 millimeters.

The chart accompanying this article was worked out by Mr. Schulze and shows the difference in yields obtainable by increasing the degree of vacuum or reducing the pressure.

The patent of which 49 claims were allowed, covers the narrow cut oil made by the process and the apparatus used.

LOS ANGELES, Sept. 8.—Those who knew R. H. Herron when he was in the oil well supply business years ago will be interested in knowing that he now resides at Santa Barbara, with his family, and is head of the Submarine Oil Company which owns and controls many of the wells at Summerland, where about 200 wells are producing from the ocean.

LOS ANGELES, Sept. 9.—W. L. McClain, of the geological department of the General Petroleum Corporation, who spent a number of years assisting in the development of the Wyoming oil fields, is now enjoying a vacation in and around Casper.

Many Men, Many Foibles, In Jobbing Trade

Here Are Some Of The Quirks And Wrinkles In The Business Methods Of A Few Of Them

By Ward K. Halbert

STAFF REPRESENTATIVE

NOT long ago it came to light that a large and successful Chicago manufacturer made a dicker to buy a small and obscure oil business in Minneapolis and was turned down cold. This resurrects the story that the oil business in question has operated profitably and continuously for about 35 years and has never had more than four men in its whole organization. When last reviewed there were only three, one elderly gentleman, his youthful nephew and a temperamental old grease maker.

These men are not rich, but comfortably situated. They have a product of merit and only one. For more than 30 years they have worked successfully to improve that product, but have never developed another. The product has a limited field of distribution, but it does not nearly cover that field, although it has no competition to speak of. The volume of production has grown steadily from year to year as one satisfied user recommends it to somebody else.

The only set-back the business ever had was during the war with Germany. As it happened the slowly growing demand for this grease specialty (for such it is) had developed most rapidly in the German empire and the blockade closed the outlet. So while many other oil companies prospered, this one retrenched. But in spite of the condition of the mark at the present time, the firm is getting back some of its export business.

Persons well acquainted with the firm say it has never over-played its hand and its prices are right, in proportion to manufacturing costs.

These men feel no urge to expand their business if it involves anything revolutionary. They do not care how good a grease gun some other firm can make, nor how much distribution that grease gun might give their product. Persons who want their grease can buy it and pay for it. They are not relinquishing the supervision of their business to anybody soever.

This Man Runs Business With Fists

IN a fair sized middle Western farming town lives a two-fisted guy who runs his oil jobbing business from the shoulder out. He has his house rules and his code of trade ethics and enforces both with his knuckles.

His name is Croaker and he uses a frog for a trade mark, which seems modest and retiring enough. Croaker is not a bully. He has been known to take a licking and laugh about it, and he is an ardent advocate of the theory that "Right makes might." Nevertheless he has not hired a man in six years who was not an athlete.

Croaker himself used to be welterweight champion of some fleet or another. In applying to him for a job, a man should bring along all his medals awarded for prowess in the prize ring. Nothing less than a cauliflower ear will be acceptable. The highest paid man in his warehouse today can lift a 50-gallon drum of lub oil off the rack with no great a show of exertion. Some of his men have gone over the hill as "pug champs" but each one still has something in his sleeve.

The last time I saw Croaker he was explaining why one of his tank wagons looked unusually dingy. The driver insisted on not painting it because he did not want to hide the teeth prints of a Standard Oil Co. salesman that he cherished on the side of the tank.

It seems that some months before the S. O. man had ridiculed the frog to a garage man, while this driver was making a dump.

"Just for that you kiss the frog", said the driver, taking the "white collar feller" by the scruff of the neck and the seat of the pants and pushing him toward the frog to the extent of $50 worth of dentist bills.

"Standard is good competition", Croaker declared. "If you get dirty treatment from Standard it's the manager and not the company. They can't hire all good men. There is obliged to be some skunks among that many people.

"When Standard sends a new manager out here and he starts something dirty, I don't get sore at the company and write a hot letter in to Colonel Stewart. I know the Colonel is not backing him up in his dirt, and besides the Colonel would never get the letter. The way we handle that, is this:

"One of us goes over to talk matters over with this here new manager. If he seems reasonable and fair minded, then alright. But if he gets snotty we just 'clean-up on him for luck.' He is not going to tell his boss about that. Who would? He goes to work and thinks up a good excuse to resign, or ask for a transfer. Maybe his successor will be a better man.

"Yes we set aside a little sinking fund for fines."

His Hobby Is Making Good Oil Men

CONTRASTED sharply with an oil man who fears the knowledge his tank wagon drivers acquire, expecting them momentarily to graduate into competitors of his, there is a jobber down in Missouri who has no hobby except his own personnel. He plays golf only a little and cards even less, but he is a perpetual bureau of information on the details of his own business for any employee he has. His competitors marvel at the way he is able to hold together a high-powered organization of workers.

If his business was a young one, it would not be surprising, for many organizations are officered by men who were once obscure employees, back when the business started, and who grew up with it and took a better position occasionally because they were interested in their jobs. But this is an established concern controlled by one man. He has no fancy profit-sharing plan. He has no system of selling his employees stock. But he gives them tutorage.

"There is nothing know about the business that any of my boys may not know," he says. "I have spent a lot of time and money on young fellows only to have them get their education in oil and go away and sell their ability to some competitor. But they are my friends, every one of them. And they are friends I can be proud of too; all of them are good oil men, most of them

"Jobbers I Have Known"

"THIS article is a piece of patchwork with no moral, and no purpose save to rescue a half dozen or so remnants of good stories from a dusty bottom drawer, where they have been aged in wood until (let us hope) they are safe to take," Mr. Halbert wrote when he sent this story in.

"Too bad their real names can't be given. In my knocking around the country visiting jobbing plants for N. P. N. I've made the acquaintance of several who had 'worked out their salvation' along original lines, to say the least. Modesty is one virtue they have in common, however. They just don't want to be talked about.

Anyway, some of their business and personal characteristics have stuck in my mind. Maybe other jobbers would be interested in a few sidelights from here and there. So I've put them on paper."—Editor

are highly paid, and some of them are eminent.

"I wish I could keep all these young fellows and have them take places in the business, but it is too small. My little institution will not afford opportunity for all of them. It would not pay them what they are worth. Just like a father raising a family; the best I can do for them is to let them go somewhere else after they have gotten so far along that I can't afford to keep them. You see we do not have anything but good men around the place I don't hire a bunch of strong backs, I take school boys instead.

"Every stroke of work a man can do in the oil business (up to a certain limit) is worth money to him. It is education. There are always young fellows who want to augment their theory by a little first-hand contact with oil. And they are entitled to it. They have to get more money than an ignorant laborer for the same work, but usually they do it a little better, so the difference is not a complete loss.

"Besides, I like to associate with bright young fellows. There is more pleasure in having them around.

"I never employ a man whom I do not believe is capable of running the entire business. That is, he must appear capable of taking the training right here. There is not a man on a truck or in the warehouse or yard with less than high school training. Some of them won't stick, of course. Well if they are afraid to dirty their hands they are no good for the oil business. Those who stay with me will select some branch of the business they like and begin to develop. Some of my 'graduates' are sales managers, and some are refinery chemists, and others are cost accountants. I couldn't afford to keep too many men like that, you know."

This Fellow Never Fails To See The Point

DOWN in that picturesque country where Missouri and Arkansas come together, there is a jobber who is one of the best all-around cutters of corners in the business. There is always an easiest way out, and he seldom fails to find it, in any situation that arises. There are those who view his sales tactics with alarm. Some of the refiners who supply him with material testify that he is a keen trader. But his business is desirable, in fact it is sought after, for he is a super-salesman. Twenty-five years ago he is said to have collected a premium on kerosene by virtue of a peculiar rich yellow color.

It has not been necessary for him to have a fancy service station in order to get his share of the business in his little headquarters city, until recently. But now even in the "sticks", it is hard to keep up with the business without all modern facilities. So a service station graces Main Street, close to where it crosses the railroad, and less than three blocks from the shopping center. The station is a handsome thing, and modern in every detail. In the east it would cost $20,000 and probably the owner paid half of that amount where it stands.

One Saturday this spring he held an official opening and gave away one gallon of lubricating oil with every purchase of gasoline. This sounded strangely extravagant at first, but when the details come to light it is understandable. Several refiners were dickering with him for a lub oil contract and he closed with the one who agreed to supply the oil for his opening day at 25 per cent of list price. The advertising on opening day was worth something to the refiner, to be sure, but our jobber friend knew just about how much it was wortn to him and collected it, with ease.

Before this opening he ran three full-page advertisements in the local daily paper, getting the publisher's low-down contract price, $100. When he supplied copy for the ad, it was a gem of art, showing a picture of the new station and announcing the prize feature of the opening day. But across top and bottom of the page was a border of small business cards advertising the architect, the construction engineer, the electrician, the painter, the interior decorator, the furniture firm and others who took part in building the station. There were 10 of these cards for which he collected $10 each, taking his full page $100 advertisement free.

He Actually Uses Well Know Golden Rule

PROBABLY the most peculiar oil jobber whose friendship I ever made, is odd for the simple reason that he is in business, for he is a "Bohemian" at heart. He is a poet of a kind and actually writes verse for pastime. He makes money, but he has no love of money, and for that reason does not make as much as some others. He preaches "Do unto others as you would have them do unto you", and does not pretend to be original.

Do not get the idea that this man is a moralist or that he has an attitude of "Holier than Thou," for I have seen him deep in his cups, and I have heard him make remarks that required special audiences. But in that corner of Alabama where he does business he is looked upon as a past master in trade ethics. Oil men who are his competitors, as well as other friends, seek his advice in business matters although they have been more successful than he. And he was educated in medicine and not law.

It is hard to call at his office without meeting there somebody of influence and prominence. Statesmen and philanthropists like to hob-nob with him but he has never held office and never had more than enough money to endow a respectable library. His bulk plant is so bright with paint, the ground around his tanks so neatly sodded, his driveways so white with fresh chat, that the establishment looks incomplete without an ornamental fountain on the premises, but none is there. He is no spendthrift.

His only service station which is supplied by gravity from the bulk plant is in beautiful surroundings and attractive, but it could be duplicated for $500 at present prices of material. His executive ability consists chiefly of a sense of proportion and fairness. No certified public accountant would ever allow him to claim on his books half the "good will" he really possesses as an asset. With his friends and reputation a regular business man soon could own a good part of the town. Without his friends and reputation he would surely have to write verse for subsistence. At the last count there had not been a price war in the section where he is chief arbiter in nearly five years.

Shack Headquarters But Business Is Strong

VANITY is a fault which some outsiders call the besetting sin of the oil industry. Producers who are prosperous are heralded to the world in such glowing terms that the public thinks all producers are rich; Some refiners refuse to cater to customers who order one or two cars at a time; a broker who turns a deal for less than a quarter of a cent takes a chance of being laughed at, and most any jobber would blush to have his plant and equipment look like that of a coal dealer.

But vanity has nothing to do with the business of a certain big town jobber whose products are so good and so established that they are known all over the middle west. He is reputed to pay the best salaries and commissions of any oil man in his region, but he certainly holds down his overhead.

"He has done business in a shack for 20 years, waiting for it to burn down so he could be morally justified in moving into a comfortable place", one of his salesmen whispered to me a year ago.

Trying to catch this man at his office you will transfer three times on surface line cars going out of the Chicago loop district, or you will travel for more than half an hour by automobile,—with time out for stopping and asking the way. And when you reach the appointed street corner you are still not there.

If the establishment were not so near the stock yards it might be smelled from the car line, but the reek of burning hair blots out all secondary odors over a radius of several kilometers from there.

Then if you have fortitude and will venture up the adjacent alley where the footing may look a little doubtful, you

will come to the place. Putting on your "near spectacles" you will be able to read the sign on a board over the door, a sign which the smoke of 20 years has almost neutralized with the drab of the rest of the board wall.

If there is a limousine in the alley, the handsomest limousine you ever saw, with balloon tires as white as you would wish your own shirt front, with glistening silver trimmings and name plate, with speaking tube for communication to the chauffeur, with cut glass vase a fragrant nosegay; with all the soft luxuries known to the automotive industry; if such a machine is standing there, well, the gentleman is in.

There is no glass in the office door. Boards will squeak when you enter. You will stand there unobserved for a while. Finally somebody will indicate fo you to interview the fat girl behind the Oliver typewriter that sits on the chassis of an old sewing machine. She is quite unique in that she never uses the word "conference." She will tell you the boss is "tied up" and can't see you that day.

After exhausting all the tricks you know to get your card taken into the ante-room you will fare forth to the alley again in dismay. And Lo! The limousine will have gone. The boss has slipped by you in the semi-darkness, "called it a day" and gone home.

NEW OIL STATION CONSTRUCTION

Warren, O.—The Good Petroleum Co. organized here recently by E. T. Sproull and Charles A. Gabig to retail and wholesale gasoline and motor oils, have just completed a bulk plant and service station. Mr. Sproull says the company will sell a high grade of gasoline at the same price as regular motor gasoline and under the trade name of Go-Good.

* * *

Celina, O.—Smith Bros. are completing a filling station here and will handle Indian Refining Co. products. They have tank car storage at Celina and Rossburg, O.

* * *

Biltmore, N. C.—Reliance Coal & Transfer Co. is completing a bulk station. It will handle J. G. Deshler's Benzol blend.

* * *

Alexandria, La.—Mecom, Cobb & Co. will build a $7,500 filling station here on a lot the company paid $15,000 for.

* * *

Bearden, Ark.—Gay Oil Co. is building a bulk and service station here. J. W. Sanders will be the local manager.

* * *

Wheeling, W. Va.—City council has granted White Motor Sales Co. and Charles Nickerson permission to install filling stations.

* * *

Chaska, Minn.—United American Oil Co. recently opened a service station here which contains a rest room.

* * *

Eugene, Ore.—E. D. Gurney will construct bulk station to handle General Petroleum products.

* * *

Zanesville, O.—Sinclair Refining Co. is building a bulk plant.

* * *

Spruce Pine, N. C.—Standard Oil Co. recently completed a bulk station.

* * *

Smithville, Mo.—Standard Oil Co. is building a service station here.

Greenville, N. C.—Two service stations, known as the Ever Ready and College View, are under construction and are to be opened for business about Sept. 15. These will bring the total stations in Greenville up to nine, eight of which handle Standard Oil Co. products.

* * *

Grand Forks, N. D.—Standard Oil Co. has started work on a divisional distributing plant here to cost approximately $75,000.

* * *

Carroll, Ia.—Frank C. Wright has been granted permission to build a service station here.

* * *

Clarksville, Tex.—Magnolia Petroleum Co. has acquired a site for a filling station here.

* * *

Butte, Neb.—R. H. Wells is completing a service station here. Sinclair oils and gasoline will be handled.

* * *

Greenville, O.—Home Oil Co. is to build another filling station here.

* * *

Hot Springs, N. C.—Standard Oil Co. has just completed new bulk station.

* * *

Topeka, Kan.—Sunflower Oil Co. is building a service station here.

* * *

McGregor, Iowa—Standard Oil Co. opened a service station here Sept. 1.

* * *

Creighton, Mo.—Skelly Oil Co. is building a filling station here.

* * *

Tippecanoe City, O.—Miami Oil Co. building filling station here.

* * *

Hancock, Mich.—Prini & Lucchesi of South Range, building filling station.

* * *

Bloomfield, Neb.—J. B. Gossard building filling station.

* * *

Glouster, O.—C. K. Rockhold purchased lot for filling station.

A Barrel Flange of Pressed Steel

HERE is a pressed steel flange for steel barrels and drums now in use by many of the leading barrel manufacturers.

Thoroughly dependable in quality—low in cost, and can be welded more quickly and without danger of warping.

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Appraisal Of Oil And Gas Properties

By Roswell H. Johnson,

Professor Of Oil And Gas Production, University Of Pittsburgh

And

Paul Ruedemann

Appraisal Engineer And Geologist, Gen'l Mgr. Thompson & Black, Tulsa

Chapter VI (Continued)

Age-Size Method.—Of all the methods so far developed this approaches most nearly the degree of refinement essential for accurate commercial appraisal work. It deviates from the law of equal expectations in that age is a joint factor with size in the curve construction.

The first step which led to the method was devised by Willard W. Cutler, Jr., as described in the paper by the senior author and E. E. Roth.[1]

There are two steps; one the drawing of curves for each year's relation to the succeeding year, and secondly the final composite curves.

With the same wells used in the other methods, an attempt has been made to illustrate the principles.

On a large sheet of co-ordinate paper lay out scales suitable for the well sizes for the particular years. Both abscissa and ordinate are production scales. First a scatter diagram is made of the production the first year in relation to the second year. The points are connected in succession by a line and a smooth line is drawn so that the area to the right of the line and inside the points roughly equals the area to the left and inside the points. This is simply a means of drawing a weighted average line. Unlike the shingling curve, the larger the number of wells the better the method works. Each additional well involves very little work after the diagram is set up. The average line should not become vertical or take the reverse inclination as this woud indicate that wells too dissimilar have been combined to permit the construction of a composite curve.

By the same procedure, make a curve for the second year's production of each well to the third year and so on for each year. In the case illustrated ten years of suitable information was available.

For any given odd size of well, say 9775 the first year, its production for the second year can be read. With that figure, the production for the next year can be read and so on. From this a decline curve for such a well can be drawn.

(See Figure 7, Page 82)

A series of curves can also be drawn in this way on one sheet for wells having 10,000; 9000; 8000, etc., respectively in the first year.

The following table presents the values for the composite curve as read from the scatter diagrams in fig. 8.

Use of the Curve.—In reading future production for any well from this set of composite curves, find the point for the given age and size. For example, assume that a well produced 750 barrels per year, the year prior to the date of estimate, which was the third of its life. On the abscissa find the third year point, thence read up to a curve on or near the 750 barrel line. The production for the fourth year on the curve at this point will be the first for the appraisal. The fifth year will be the second, and so on. Instead of choosing the nearest curve, the results can be obtained by interpolating for the appraisal, by drawing a line between the converging curves above and below, keeping the proportional distance between them.

So far the age of the well above has been considered. Where the wells are all from one pool, then the age of the pool is ordinarily more important than the age of the well and should be used instead of well age, in the Age Size Method. In this case, where the number of wells (or leases) is quite large, it becomes possible to introduce another variable by segregating the wells into well-age classes. One can then read from a graph what a well making 9000 barrels in its third year, which is the fifth in the history of the pool, will do in its next year.

Rate of Production Curve.—[2] A daily production decline curve is called a rate of production curve. Such a curve may be estimated from any individual property's annual production decline curve, or from an average or composite production decline curve of a tract or pool.

A rate of production curve when used in conjunction with the annual production decline curve from which it was made shows the average daily production of a well at the end of its period of production, the position of which is known on the annual production decline curve; and conversely, it shows where a well whose average daily production at the end of a specified period is known should be placed on the yearly production decline curve.

1—Johnson, R. H. and Roth, E. E., The Effect of Age and Size in Oil Well Decline Curves: Am. Assoc. Pet. Geol., March, 1920

2—Cutler, W. W. Jr., Manual for the Oil & Gas Industry: Bureau of Internal Revenue, 1921, pp. 90-92.

Tabulation of Well Data from Preliminary Curves to Get Points for Composite Curves. Production in Barrels Per Year—Gross

Year		1	2	3	4	5	6	7	8	9	10
Composite Curve	1	9000	5100	3400	2480	2030	1575	1250	930	850	610
	2	5100	2800	1500	875	725	475	375	250	240	120
	3	2800	1500	775	475	350	250	200	130	100	90
	4	1500	820	440	280	200	170	150	120	100	90
	5	820	430	250	175	100	95	80	60		
	6	430	220	150	125	75	60	50	40		
	7	220	110	100	90	70	60	50			

The curve is advantageous where production for less than a year is given. The rate of production curve may then be used in order to place the well in its correct position on the average yearly production decline curve. Knowing the annual production, it is possible to estimate the future production from a curve or tables devised for the purpose. The daily production to be used in the application of the rate of production curve

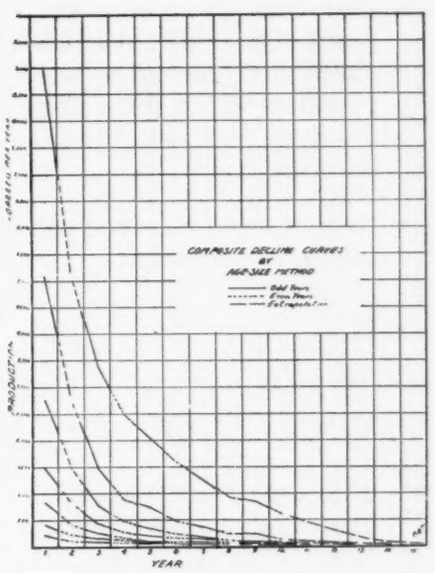

Figure 8.—A series of composite decline curves made from the preliminary curves in the preceding figure.

should be the average daily production of the well at the time the estimate of future production is made. Care should be taken in determining the present normal daily production to use a daily production which is free from all abnormal influences. It should be the average and consistent with the probable future practice in operating the well.

The use of the rate of production curve with a composite decline curve of a district should always be confined to those wells or tracts having production records so short or irregular that an undivided well decline curve or daily, weekly or monthly records, extrapolated to get data for an annual curve, is not accurate. The use of any average curve is likely to introduce into the estimates of future reserves errors which may be avoided by the use of curves formed from the production records of the wells of tracts under consideration.

A composite or average decline is a curve approaching a hyperbola and not a straight line. Consequently, the average rate of production for any year occurs at a time before the middle of the year. The greater the curvature, or the

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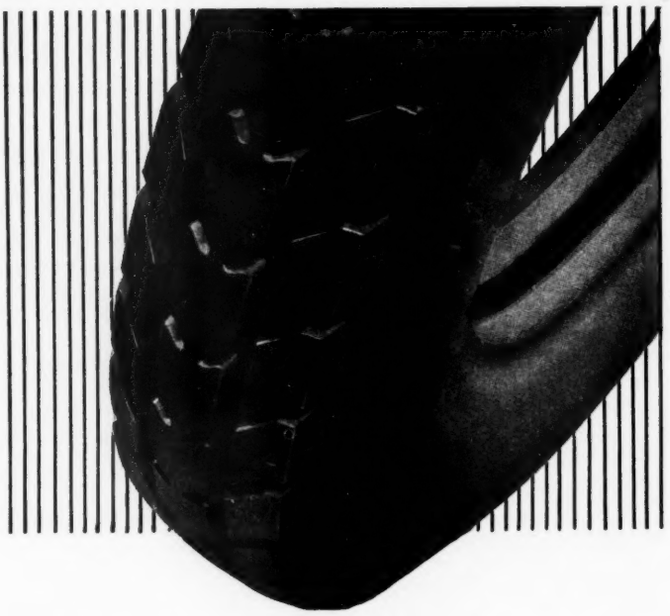

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Dallas, Texas

rate of decline, the earlier in the year occurs the average daily production.

By dividing the annual segments of a curve into a number of equal parts, reading the ordinates of these equal divisions and averaging them, the time in any year at which the average daily production occurs may be found by plotting the average ordinate on the curve. The point on the curve where the average ordinate for a year intersects the curve will represent the time of year at which the average daily production occurs. The time of the average daily production for any year varies chiefly with the rate of decline. The following table shows the time in the year at which the average daily production for the year occurs, based upon the percentage of decline from the previous year.

Decline of yearly production from previous year.	Time before the end of year when average daily production occurs.	
Per Cent	Per Cent of year.	Date
0	50	July 1
10	51	July 26
20	52	June 23
30	53	June 19
40	54	June 16
50	55	June 12
60	57	June 4
70	58	June 1
80	60	May 24
90	63	May 14
95	66	May 3
97	69	April 22
99	73	April 7

Manual for the Oil & Gas Industry: Bureau or Internal Revenue, 1921, p. 91.

This table will locate the average daily production for the year at a point where the daily production is within 5 per cent of the correct average daily production for the year.

Construction of Curve.—To construct a rate of production curve for any district where a composite or average yearly production decline curve is available, move the yearly segments of the annual curve to the left, the distance indicated by the time in the above table. This may be done on either quadrille or logarithmic paper.

The same horizontal scale representing time is used for both of these curves. The vertical scale representing barrels per year is divided by 365 in order to provide a production scale for the rate of production curve so that any line representing production in barrels per year will also represent the corresponding production in barrels per day.

Any point on the rate of production curve represents the last day's production for the annual amount shown on the average or composite decline curve vertically above.

Individual Well and Property Curves—In any appraisal where the oil well production is available for a sufficient period, the calculation of future yield should be directly the basis of this information. Composite decline curves built up from other properties are averages, and are not to be used indiscriminately when valuing an individual well or tract. The extrapolation of information pertaining to the particular tract or lease will ordinarily give a closer estimate of reserves than an attempt to estimate it from an analogous composite curve.

The installation of gas, vacuum or compressed air pumps often increases the rate of production for a short period, and then decline again sets in. The methods do not seem to hasten the end of the life of the wells but merely increase the ultimate recovery by the amount of production yielded above that if the installation had not been made. The persistence is generally nearly the same in the segment of the decline curve following the rise in production due to forced pumping, as the one representing similar rate of production at a period before the application of the forced pumping.

A graphic method for finding future reserves on an individual property is shown in Fig. 9. The smooth curve is not begun until after most of the flush production is off. This method of extrapolation requires careful consideration as the personal equation is large and variable results are easily obtained.

Curve for a New Well in a Previously Unproductive Region.—The future production of a new well in a previously unproductive or untested region is of course especially difficult to estimate. If the well is operated to capacity daily for a number of days and careful production records are maintained of the results some idea may be gained of its possible rate of decline and future reserves.

The most feasible means for making the calculations is to plot the daily production on co-ordinate paper and to draw a smooth curve between the points; but

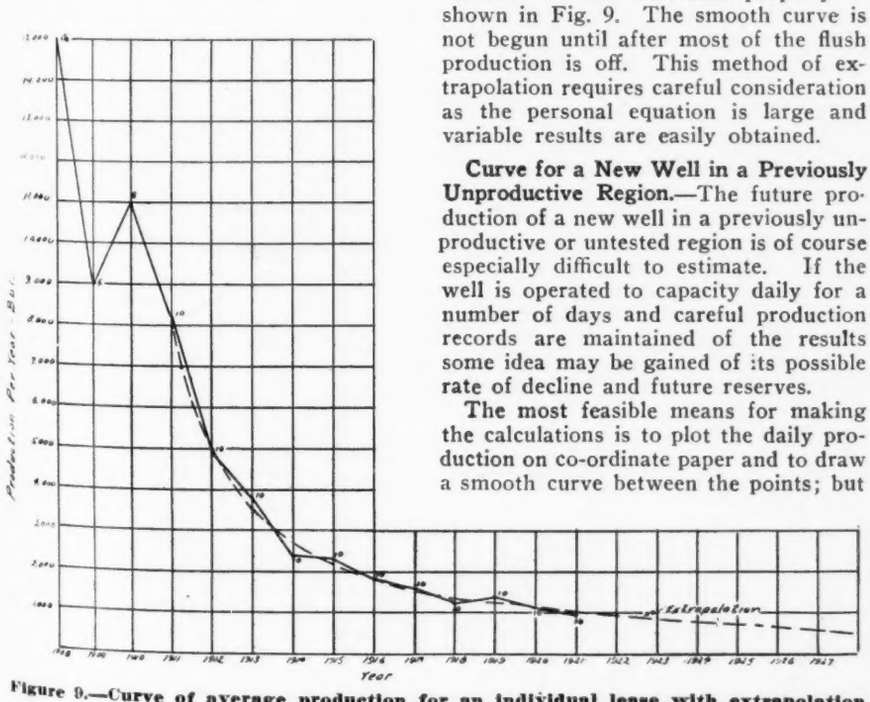

Figure 9.—Curve of average production for an individual lease with extrapolation of future yield. Numbers indicate numbers of producing wells.

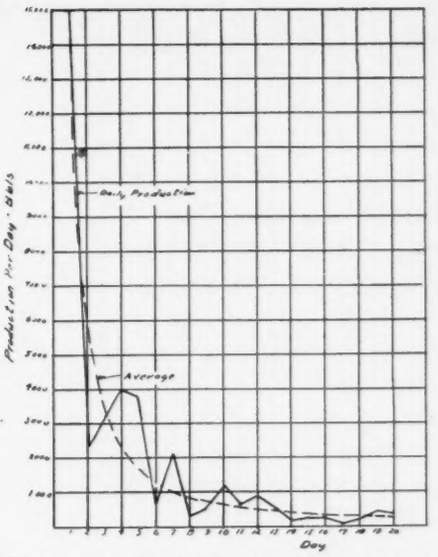

Figure 10.—Chart showing an individual well daily production curve and the average curve (dashed line) drawn preliminary to transferring of data to logarithmic paper for extrapolation.

do not project it. Then transfer the end points of the curve, and at least one more, to logarithmic paper, and by shifting to the right or left get the points arranged in a straight line. By extrapolation find the daily amounts for as many days as possible and by additions obtain the weekly, or preferably, the monthly production for at least three weeks, or three months. These results, by replotting against a weekly or monthly scale, whichever it may be, can be further projected to get the yearly totals, for at least three years. Again replotting, this time with the yearly totals, a postulation of ultimate production, or if desirable the annual units thereof can be made. Figure 10 on this page and figure 11 on page 78 show the procedure mentioned.

This process is not always reasonably accurate but if carefully done should be sufficiently reliable as an observation of rate of decline and to use in contingencies as the basis for appraisal.

Daily or Monthly Rate to First Year.[2] — In the study of young wells it becomes necessary to utilize shorter time periods than a year. The most valuable relation to ascertain is that between either the initial (the production of the first 24 hours), or the first month's production and the production of the first year. Both curves can be plotted on one graph as in Fig. 12.

In the illustration there is given the first year's production on the abscissa and either or both the first day's or the first month's production on the ordinate. The dots are entered, making a scatter diagram. A curve is then drawn through the central tendency or the location of

(Continued on page 82)

2—The daily Rate to First Year's Production Curve was developed by C. H. Beal in "The Decline and Ultimate Production of Oil Wells, with Notes on the Valuation of Oil Properties": Bureau of Mines, Bull. 177, 1917, p. 59. G. H. Alvey later described a similar curve based on monthly rate to first year's production in "Decline Curve Predictions from the First Day and First Thirty Days:"Am. Assoc. Pet. Geol. Vol. 4, No. 2, 1920.

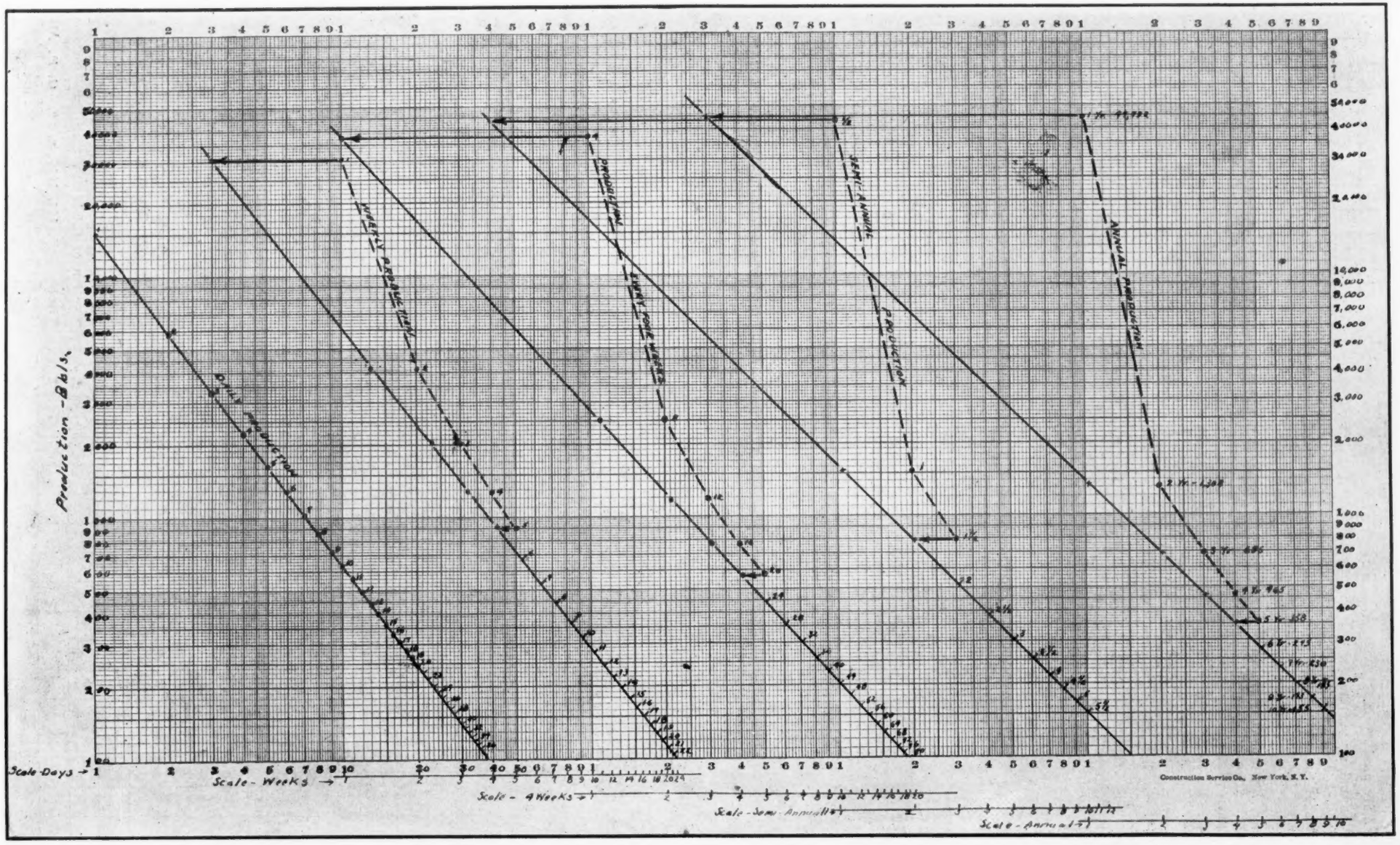

Figure 11.—Chart showing projection of daily production line to give weekly production and of the weekly production line to give production every four weeks, etc., until finally a curve of annual production is obtained. Broken lines are first plotting and solid lines the position of points when in a straight line

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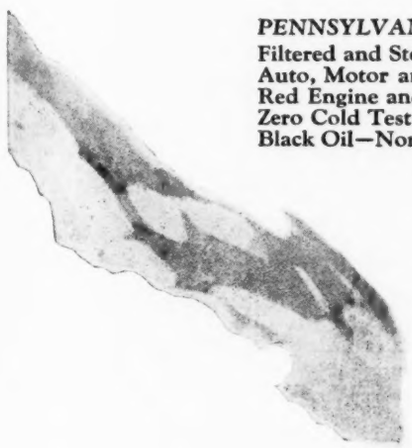

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greatest density of distribution of the dots. The month-year relation has a very much lower probable error than that of the day-year and should be used in preference where possible. From the initial production or the first month's production the barrels the first year can be read from the curve. The remaining future yield can be calculated from the composite decline curve for the pool, using the first year's production estimate as the starting point.

Economic Limit.—This term, as defined in the Manual for the Oil and Gas Industry, is "the smallest production per unit of time at which a well may be operated profitably." There is considerable latitude in the words "operated profitably" since the cost is incurred for a lease in the main part and the lease has some wells which are larger than those in question. Many producers therefore permit some wells to continue pumping past a point which would be the economic limit, if all the wells on the lease were the same size. Such a practice is sound within limits. For most calculations the economic limit will be taken on the assumption that the wells on the lease are equal. Gas wells have a more definite limit in the fixed annual rental which is its largest element of cost and is definite.

The "Economic Limit" is a feature that has come in for considerable study by those concerned with the more commercial phases of appraisal work. Since such appraisals have to do frequently with consolidations of interests which have hitherto been operating independently in the same field, or with a situation where one company is actually purchasing the property of a neighbor, it is often necessary to go beyond the bare facts as to the apparent economic limit at the time of the review, in order to determine a new limit that will result from a change in the operating conditions. The important features to be considered are:

Probable future operating costs.

Probable future price of oil or gas.

As the economic limit is approached some wells will be abandoned as unprofitable. The continuance of others will involve the study of that portion of operating expense which is fixed, namely supervision, accounting, interest, and other charges which continue independently of any one or set of wells.

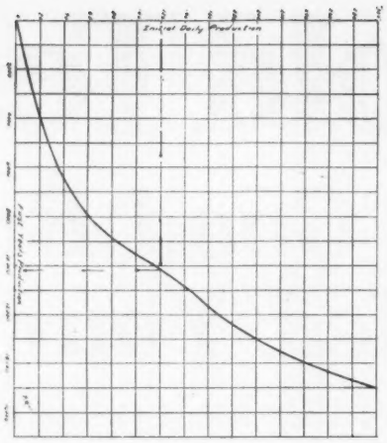

Figure 12.—Curve for finding the first year's production from initial daily production for the Clinton sand, Ohio.

The Co-ordinates of Production Decline Curves.—The custom of describing a decline curve by giving the co-ordinates of two points on the curves when it has been so placed on logarithmic paper as to be most nearly straight has been recently introduced by W. W. Cutler, Jr.,[3] and is very useful for briefly describing curves. The co-ordinates of two points then definitely establish the persistence factor for the curve. The points $X_1 = {}^{3}$ $Y_1 = 3200$ and $X_2 = 15$, $Y_2 = 175$ if plotted, and a straight line drawn through them, would reproduce the decline curve. The x ordinates in this case represents years and the y ordinates the production for the respective years. A tabulation of the co-ordinates expressed in this way for nearly every field in the country is given in the appendix.

Designation of Spacing of Wells with Decline Curves.—It is highly important that the average acreage per well be known for those composing the composite or individual property decline curve. These data will aid in making predictions where a change in operating practice is anticipated in this respect. Furthermore, this information would be a valuable guide in calculating reserves on undrilled locations. It is unfortu-

3—Manual for the Oil and Gas Industry; Bureau of Internal Revenue, 1921, pp. 79-84.

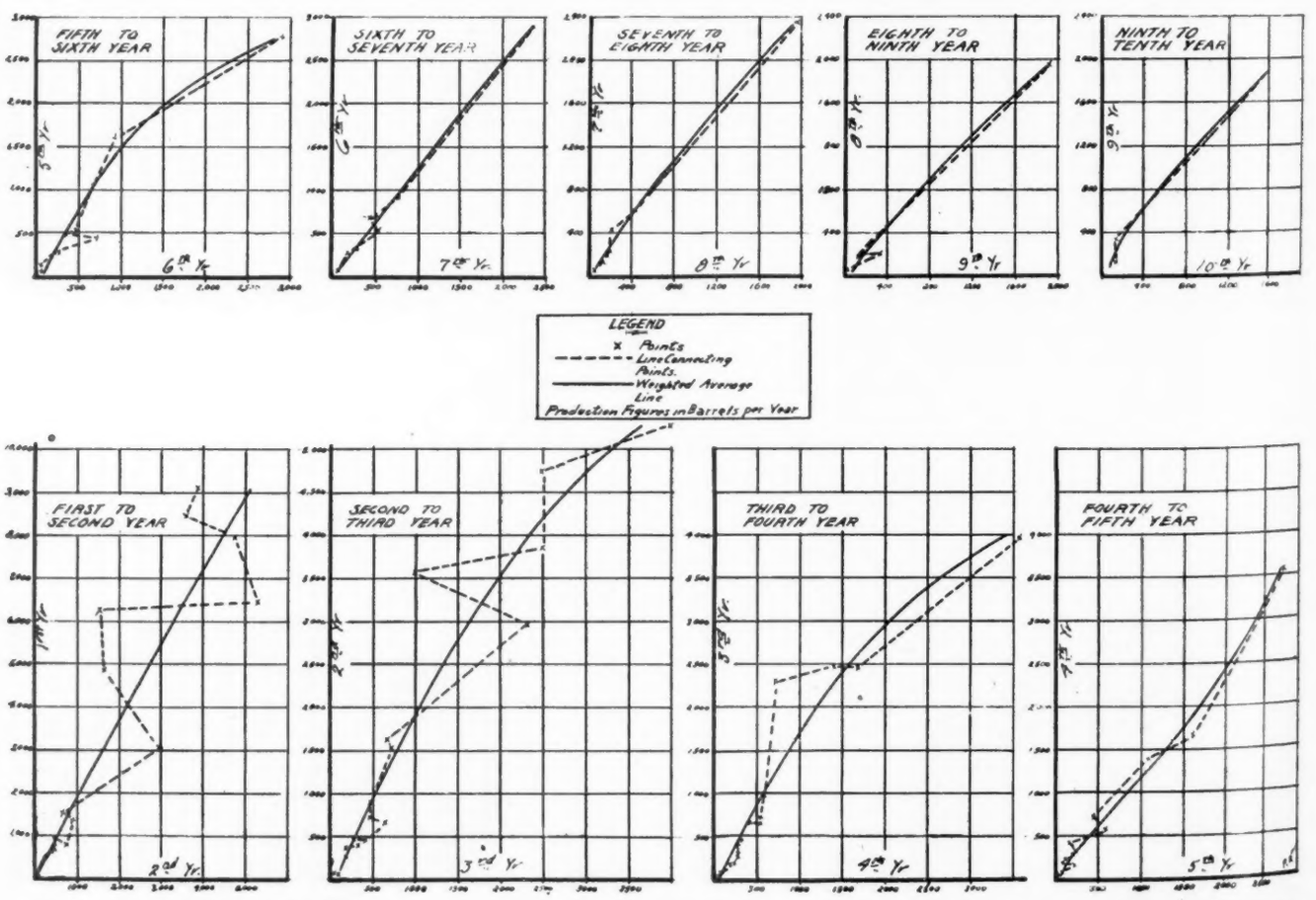

Figure 7.—Preliminary step for constructing composite decline curve by age-size method. Scatter diagrams are made of the relation of production each year to the following year.

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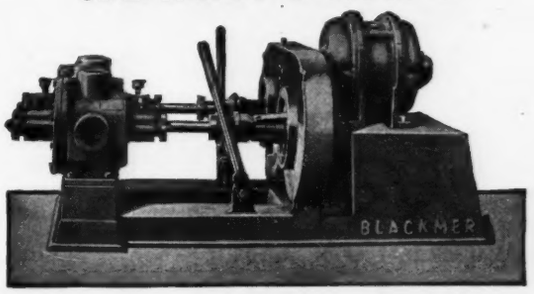

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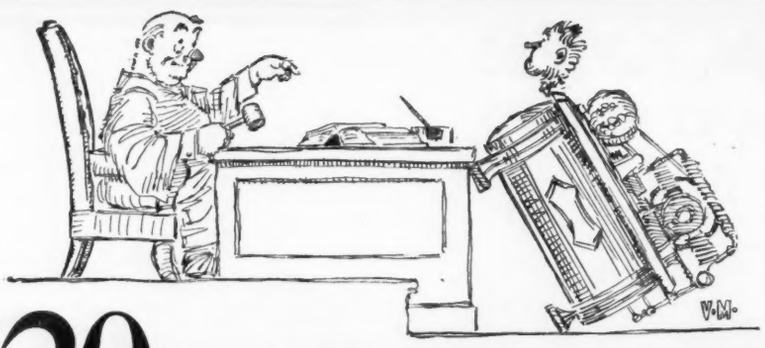

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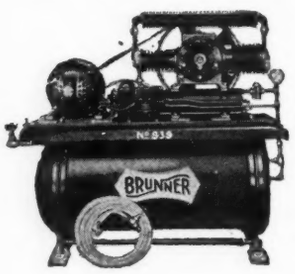

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nate that this is lacking in so many of the curves published by the Treasury Department.

Estimation of Future Yield by Computation of Voids.—In the past, many engineers made calculations of oil reserves by estimating the amount of voids in the producing sand and the probable saturation and recovery. In the case of natural gas, this method requires a further assumption, that of original closed pressure on the basis of depth and most analogous fields.

The general formula for oil is as follows:

Area of pay X thickness of pay X % effective porosity X % containing oil X % recoverable = recoverable reserve.

For gas the general formula is:

$$\text{Area of pay} \times \text{thickness of pay} \times \%\ \text{effective porosity} \times \frac{\text{lbs. absolute pressure} - \text{pressure at economic limit}}{\text{atmospheric pressure} + 4\ \text{oz.}} \times \%\ \text{recoverable} = \text{recoverable reserve}$$

Taking up these items seriatim:—(a) the area of pay will ordinarily be the number of wells, it is estimated it will pay to drill, times the estimated acreage per well in the spacing program planned. Strictly speaking there is probably an addition of peripheral territory contributing some oil to the edge wells although not enough to warrant further drilling in its direction. In practice this will ordinarily be considered as compensating the deficiency of the area drained which is assigned to the edge wells.

(b) The thickness of pay determination is subject to a probable error so high that the method itself cannot be expected to give good results. Without a core drill the thickness cannot be well measured, nor can there be a proper deduction for thickness of non-pay strata included in the general pay, as complete cores are uncommon except in a few districts. Even where a core drill is used the sand may be so soft as not to make a good core. Supposing that a good core could be had, there would still be an error, since the pay would vary in thickness between the wells, and in the amount of interbedded non-pay.

(c) Some of the pores of a pay are extremely small and others are so blocked off as not to be drainable at the pressure differences met in the field. Determination of effective porosity by a method of introducing or removing fluid is therefore to be preferred to the common one of absolute porosity. When only absolute porosity figures are given they should be reduced to an estimated effective porosity. A. F. Melcher, of the United States Geological Survey, now has some experiments under way that will give a better idea of the relation of these two values.

(d) The percentage of the effective voids containing oil called by Washburne[4] "saturation" has unfortunately been given very little study so that no satisfactory determination can as yet be made. It would seem better in most

4—Washburne, C. W., Estimation of Oil Reserves: Trans. Am. Inst. Min. Eng., Vol. 51, 1915, pp. 648-9.

cases to ignore this as a separate factor and let it be included in the percentage recoverable where some data at least are available.

(e) The percentage that can be recovered is so variable as to constitute another weakness of this general method. The best data available are those of Chambrier which show that only 17 % of the actual total oil at Pechelbronn where exhausted oil sand has been mined had been obtained by the wells. Since recoverability is a function of fineness of pore space, original pressure, viscosity and amount of dissolved gas (and still other variables) one dares not use this determination widely.

Any estimate of future reserves by this volumetric method has so high a probable error that it is only to be used in rare circumstances and then along with the usual method of analogous performance records. It cannot give a satisfactory appraisal as it does not give the rate of recovery which is needed for proper appraisal.

Estimation of Future Reserves for a Field or Pool.—The calculation of probable recovery from so large an area as a pool or field can only be made in a general way. Such information is seldom required for an appraisal but is in great demand when the trend of the market is to be analyzed.

The information as to initial well and pool production and number of wells is usually available from one or more of the various oil journals or papers and the U. S. Geological Survey. In comparatively new pools, the data may be entirely lacking or not yet completely compiled.

Each pool's history will show that one of the following conditions is evident:

1. Rate of production is increasing.
2. Rate of production is decreasing.
3. Rate of production is constant with a probable increase or decrease in rate.

With any of the above, there may be a rate of drilling as follows:

1. Increase in rate.
2. Decrease in rate.
3. Constant rate.

The combination of the two groups applying to the pool under examination will determine, in a large part, the procedure to be used in getting future yield.

Any estimation of reserves can be roughly made by considering the items in this outline:

1. Draw a composite decline curve for the pool.
2. Find average production per well and by the composite decline curve the future yield for such a well and hence the total for all the wells producing in the pool.
3. Find the curve of decline in initial production.
4. Find the rate of drilling and postulate the number of wells each year until the pool is fully developed.
5. With the initial production curve and (4) get the total future reserves for all the wells to be drilled each successive year and add to the results in (1) to get the grand total.

5—de Chambrier, Paul, La Source de Petrol Jaillisante de Pechelbronn: Societe d'Encouragement pour l'Industrie National, Bulletin de Juillet-Aoult 1920, p. 4.

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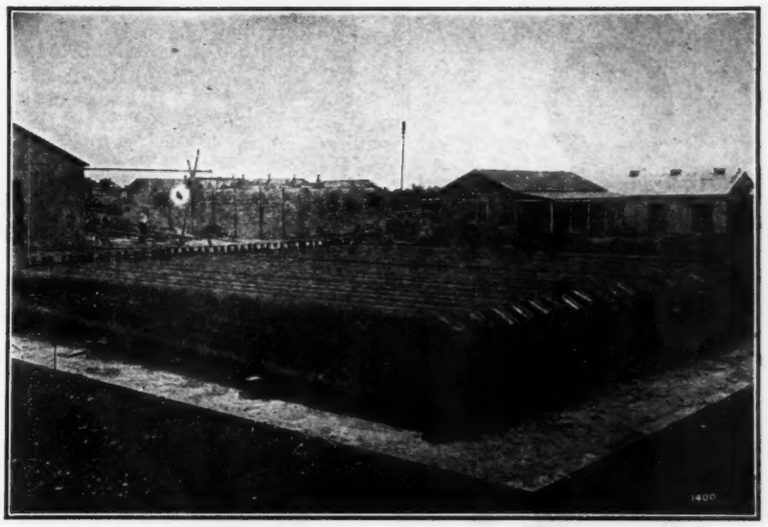

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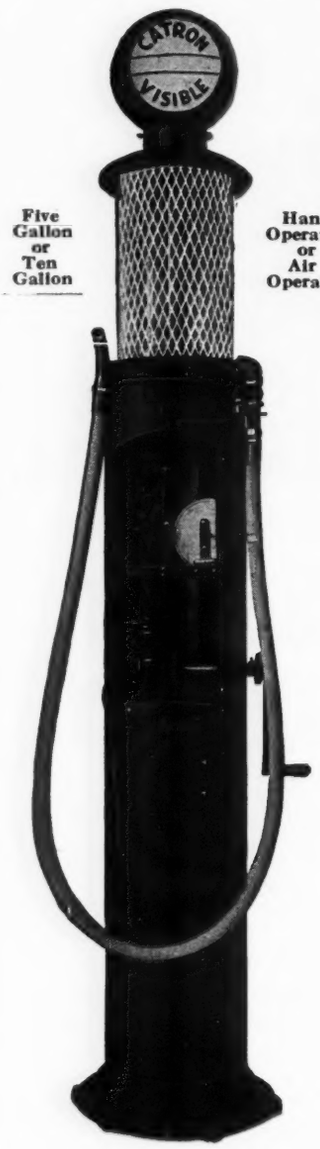

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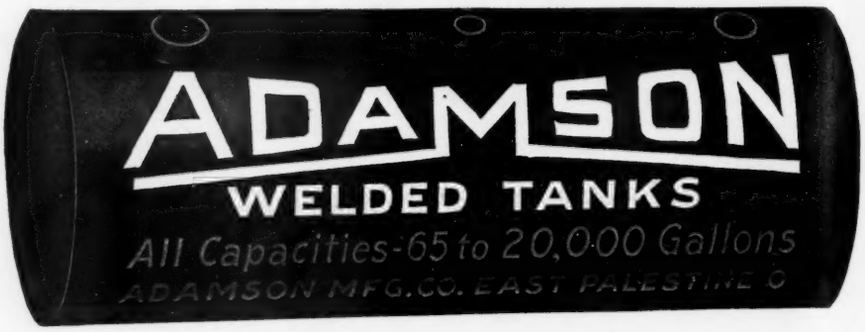

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Consistent Work On Water Problems In El Dorado Keeps Field Producing

By Lawrence E. Smith

STAFF REPRESENTATIVE

EL DORADO, KAN., Sept. 5

USUALLY the personnel that brings a big field to its peak of production only partly does the work. It moves on and leaves the real problem to those who follow.

Such was the case in the El Dorado, Kansas, field, which was discovered, or rather, indicated, in 1916; saw the real beginning of development in 1917 and reached its peak in 1918. This field covers an area approximately 6 miles wide and 12 miles long extending in a northeast and southwest direction. That portion in the southwest part of the field located on the Shumway Dome covering an area of about four sections was characterized by wells of large initial production and normally rapid decline and encroaching water. The wells in the remainder of the El Dorado field were characterized by a smaller initial production, slower decline and less rapid encroachment of considerably smaller quantities of water.

Several productive sands are exploited in the El Dorado field. These are found at approximately 600, 1700, 2000 and 2500. The last named is the principal producing horizon in the field and is known as the Stapleton sand. As it is the sand of greatest productivity and it is also the horizon subject to the greatest water encroachment all discussion that follows of methods and problems of producing oil in the field refers to the Stapleton sand.

This horizon is not in all its thickness as found from well to well a true sand being mostly a limestone formation or a sandy lime. The greater part of the pay thickness is either sandy lime or limestone with enough sand that it is ordinarily classified as sand and in this article will be referred to as sand. The Stapleton sand varies in thickness from 10 to 90 feet and in general is a compact formation but in the west El Dorado field or on the Shumway Dome it averages from 20 to 25 feet of saturated formation and is of porous gray or brown cherty limestone and evidently has joint cracks, channels and fissures which allow a rapid flow of oil together with the early encroachment of water.

In this article that portion of the El Dorado field located on the Shumway structure and only the properties of the Empire Gas & Fuel Co. are considered. The water encroachment constituted a real problem and was considered so serious that in 1919 the immediate end of profitable production was freely predicted. However, by the exercise of ingenuity on the part of the operators and the adaptation of engineering methods to meet this peculiar problem the decline has been abnormally slow and a large production is still being obtained.

In many respects the El Dorado problem was unlike any which had previously been encountered. In addition to the task of handling the water was being produced with the oil this water was highly corrosive and attacked rods, tubing, casing, flow lines and receiving tanks, making frequent replacements necessary. In some fields such as Lima-Indiana, Illinois and Gulf Coastal the corrosion problem exists but is less serious than that confronting the El Dorado operators. Since the Empire Gas & Fuel Co. owned and operated the major portion of the properties in the El Dorado field the necessity of systematically combating these problems was brought more forcibly to their attention. Competent petroleum engineers, chemists and geologists have been employed to carry on this work.

Encroachment of water into the field is from the edges of the structure and while in this field it is generally referred to as "bottom" water, the term is not accurate as bottom water is generally understood. Usually the expression refers to water which underlies the oil horizon and is let into the pay by too deep drilling. The El Dorado field production was controlled by water—the oil had little gas pressure —and as oil was produced the water pressure from the edges of the sand was immediately exerted. The best description of the condition the sand is now in is that the oil rides on top of the water—both occurring in the same formation and usually not separated by an impervious formation.

Effect of corrosive and electro-chemical action of water in El-Dorado field. Note joint at right, slotted entire length. This appears to be a case of electrolysis where the tubing was closer to the slotted side than to the other side of the pipe

Since the original encroachment of water, its level in the sand has not risen measurably and once it has been plugged off at a point slightly above the line where the oil-water contact is found, there is reason to believe that the greater part of the water will be excluded from the well for years. Conceivably where there is no impervious strata between the oil and water, the oil in time will be withdrawn to the point where the water will rise above the point where it was plugged off and the amount of water lifted with the oil will increase. This is largely speculative, however, and the Empire looks upon the plugging jobs it has done as permanent and so most of them have proven thus far.

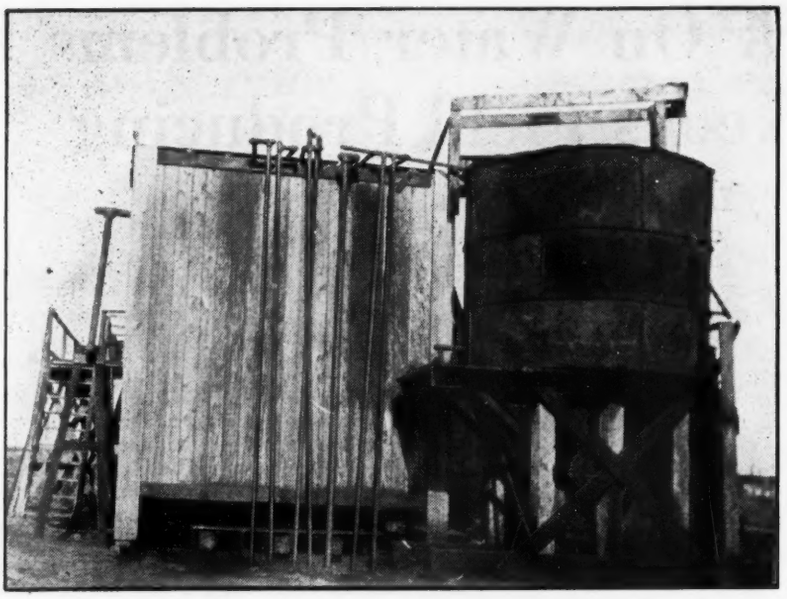
Systematic plugging was started in 1921. Some plugging has been done prior thereto, but not in a comprehensive manner. Plugging, in this connection, means the complete sealing of the sand as high as the water level, or as nearly that high as can be, cutting down thereby the amount of water lifted with the oil.

One of the essential factors the Empire found it necessary to consider in plugging in El Dorado was that each well must be treated as a separate problem. No blanket rules can be laid down. In one well the amount of water produced will be much greater than in its neighbor and there can be no definite point at which the operators will decide to plug all wells. Individual well gauges must be taken at intervals during the work on each well. The company has its flow tanks so arranged with manifolds that any well producing into the tank can be diverted into a gauge tank.

Metal Plugs Used

The plugging method the Empire adopted is wholly metallic. Cement has been tried in the field, but it has not given the satisfactory results that steel cutting and lead do. In a looser sand, such as at Smackover, Arkansas, cement will effectively seal the openings, but in the Stapleton Sand, which is heavily fissured, a cementing job would sometimes involve wholly prohibitive expenditures. Even at that, a large quantity of metal will sometimes disappear in a crevice in the sand, but in general a plug can be formed without the use of too much metal.

The first problem in the field was that of water exclusion and this has



Arrangement of flow lines permitting taking of individual well gauge on Empire lease in El Dorado field. Flow tanks are wood.

been done since 1921 and in the following manner:

First, a chemical test is made to determine whether the principal source of water in the well is from the top or bottom. Samples of the water are analyzed in the Empire's laboratory at the Oil Hill field headquarters and compared with analyses of top and bottom water on file in the offices. If most of the water is from the top—and frequently it is—the job then is one of casing repair.

When the trouble is found to be water coming from below the oil, the well is given a bailing test to determine the height of water in the hole. In this connection it is well to remark that since the encroachment of water several years ago, so far as can be learned the water in the bottom of the sand maintains about the same level in the various wells, but being an apparently inexhaustible supply does not fall below that level because of pumping. In other words, it is replaced as rapidly as it is lifted with the oil.

After the bailing test has shown the height of water in the hole, the well is cleaned out to its original total depth as revealed by the log. Then a canister of lathe cuttings is lowered into the hole. Owing to the large amount of machine shop work done by the Empire in its Oil Hill shops, there is a sufficient quantity of lathe cuttings on hand at all times to do the plugging with.

Each canister of cuttings put in is 4 or 5 feet long and a little smaller than the inside diameter of the casing. After the canister rests on bottom, tools are run in and the metal pounded down. Tools are run pretty hard so that the cuttings are pounded, or mushroomed out to fill all crevices. Then as many more canisters of cuttings as are needed to fill up to the point desired are run in, each being pounded with tools. This metal very soon is oxidized into a solid steel plug. Each canister should fill, when pounded down, about half the height of the canister, if the hole is fairly well confined. Generally, four to five canisters are required.

Lead Used For Seal

On the top of this steel, a lead plug is set to form a seal. If the hole is thought to be fairly regular in diameter, a solid lead plug 12 inches long and almost as large in diameter as the pipe, is run in and battered down with the tools. If the hole is irregular, due to much caving or successive shots, lead wool is used as it spreads better.

This method has been adopted as standard by the Empire. The most careful kind of work must be done to determine the water level in each well. Cross-sectional work is done on a row of wells and the point of water entrance is charted across the field, but this is secondary to the determination of the penetration in each well. There is evidence of considerable channeling of water through the sand, but the extent and exact direction of these channels is not determinable.

The effectiveness of plugging is shown by records kept on daily average production of both oil and water. These tests show that the quantity of water decreased consistently as wells were plugged and on Sept. 1, 1923, less than two years after the campaign has been started the water had been decreased more than 50 per cent. Recent tests show that water has not again increased.

The question of when a well should be plugged is readily ascertained by multiplying the cost of lifting one barrel of fluid by the total production of oil and water and comparing this with the value of the oil produced. If the cost of lifting fluid is abnormal consideration should then be given to whether or not the expense of plugging will be justified by the decreased lifting costs. The company in its repair work did not hope to greatly increase the oil production but believed that the life of the field could be prolonged by shutting off water and that the greatest return would be through decreased operating expenses.

Less Water, Less Power

Through extensive tests it was found that the power required—the Empire's properties are operated electrically and are therefore subjct to determination of power used—is in general proportional to the specific gravity of the fluid lifted. The less the percentage of water in the fluid lifted, the lower the specific gravity and lower the power required to lift it.

Cost accounting is carried by leases in company practice and it is therefore a simple manner to determine which wells are the chief offenders from the standpoint of lease earnings.

Production has followed a normal decline curve, but the reduction of expenses brought about by cutting down the amount of water lifted has amounted to the same thing as increasing production, so far as the company earnings are concerned.

In many wells plugged, all water has been shut off, but in others the company has had to be contented with a reasonable reduction in lifting expenses. Viewed as a whole, the expenditures have been amply justified.

II

Water encroachment in the west El Dorado field brought on two distinct problems. The first was the excessive cost of producing water with the oil from the standpoint of direct lifting expense. The second was the corrosive and electro-chemical action of the water on equipment.

The chemical element in the water which causes the trouble is hydrogen sulphide. The top water, or that which comes from above the sand, is the concentrate solution and the bottom water the dilute. The mixture of the two causes the first of the troubles, which is scale, or the formation of strontium sulphate on tubing and rods.

Scale Obstructs Tubing

The chief damage from this scale is the obstructing of the tubing and the consequent reduction of the opening through which the oil must pass. The scale will not destroy the tubing, as it is merely an accretion in irregular form. In time, however, it will almost completely close the tubing at various points so that practically no fluid can be lifted.

Thus far the principal remedy for rods and tubing scale which has formed is the well known one of pulling them and pounding off the scale. This is a slow and expensive method.

The most effective preventive of scale is to shut off the top water. The bottom water alone will not cause it, neither will the top water alone. Leaking casing through which the top water enters the fluid can sometimes be re-set or the water shut off with packer.

Secondly, there is the actual corrosion of practically every metal the water touches. Casing, tubing, rods,

flow lines and steel flow tanks (most flow tanks used are wood in this field) corrode rapidly and replacement costs are high. There is no successful preventive of corrosion and the operator must be contented with finding something that will withstand the action of the water longer than steel. The Empire has experimented with cast iron, wrought iron, and copperoid steel tubing with some success.

Electro-Chemical Destruction

With the formation of scale and corrosion, there is a third action of the water which, combined with the other two, leads to high replacement costs of equipment. This action is electrolysis, or more correctly electro-chemical, as true electrolysis is the action of currents flowing through the ground and through metal which may be in their path, such as water pipes and gas mains, in areas near electric railways, where direct current utilizing the trackage for return will leave the tracks and pass to steel and iron pipes.

The El Dorado field electrical action comes from current generated by chemical waters. The current is measurable and it is known that it exists throughout the field. Waters of different chemical content will serve as the galvanic batteries and the current will pass from one to the other. A current will flow from one side of the tubing to the other; from rod to tubing and from casing to tubing.

The result is startling. Tubing is slotted and pitted in unusual manner. Sometimes a joint will be slotted almost its entire length. This is interpreted as meaning that the sucker rod is nearer that side of the tubing and the action of the current is confined to that side. Casing is attacked also and some startling effects of the electro-chemical action, combined with simple corrosion, are revealed when tubing, rods and casing are pulled out.

There was some thought of controlling the current by the use of generated currents, but this idea has been abandoned as there is no uniformity to the action of the natural galvanic batteries within the well. Their currents will change direction from point to point with rise and fall of the fluid level and even with the change in rate of pumping a well.

Zinc Preserves Steel

Thus far about all that can be done to counteract the effect of electrolysis in a well is to give the current something which it will attack more readily than it will steel. Accordingly, it is now the practice of the Empire to cast zinc collars on the tubing. These are about 2 feet long and one-half inch thick and are placed about the center of each joint. It has been found that these will last from 6 months to a year and prolong to considerable extent the life of the steel. The current merely follows the line of least resistance and flows through and to the zinc with consequent lessened attack of the steel.

12 Big Reasons For Using

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1. Rust-proof steel core, covered with gasoline-proof rubber and heavy braid.
2. Absolutely leak-proof.
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10. No danger of static electricity.
11. External coupling—allows full gas way.
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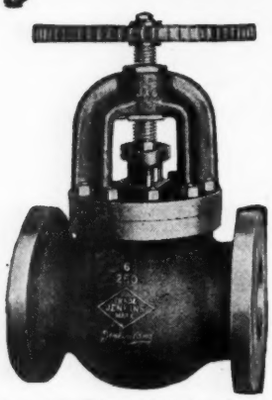

Fig. 162, Flanged, Extra Heavy Iron Body Globe Valve.

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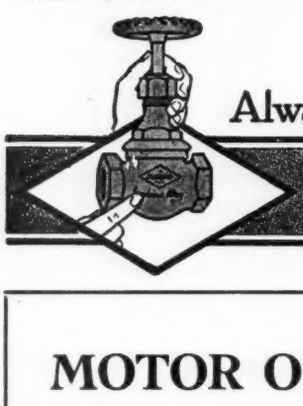

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IT is well known that some oils lose their identity under stress of heat and friction. After periods of motor use they no longer resemble their former selves. The extreme heat of internal combustion motors, causing the oils to "breakdown" has been Empire's research problem for years.

That this resistance to heat has been embodied in Empire oils without sacrificing other requirements is revealed in comparison tests.

Your own good judgment can confirm this claim. Try several grades of oil—Empire included. Notice the consistency of Empire oil after prolonged use. IT REMAINS AN OIL RICH IN LUBRICATION-CONTENT.

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OIL CITY, PA.

Guaranteed 100% PURE PENNSYLVANIA OIL

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Plant: Reno, Pa.
Buffalo Office: 637 Fourth St. New York Office: 19 Monroe St.
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The trouble is not entirely overcome, but a reduction in costs is effected.

III

First work on control of water in the west El Dorado field, as has been noted, was in the use of plugging methods. Recently the Empire has been testing another method which as far as it has been tried seems entirely satisfactory and is considerably cheaper than plugging.

The method now being tested is designated as "'skimming", and is exactly what the term implies. Instead of controlling the water from the bottom by plugging the intent is to pump off the oil which rides on top of the water. The sand being tight will stand much pressure and thus far there has been no tendency for the water to come and shut off the oil flow into the hole as might occur in a looser sand.

Clean Oil Produced

In this practice, which is being tried on selected groups of wells, the tubing is raised off bottom and the attempt is made to pump from a level about 200 feet below the point where the oil-water contact is found. The fluid level in a majority of the wells is 1800 to 2000 feet from bottom of hole. Trial and error system is used in locating the point where the well will pump off all oil in 24 hours and there the tubing is hung. At the point from where it is pumped, water will be the first fluid raised but as previously noted it does not replace itself so rapidly as to prevent its exhaustion and clean oil will presently be lifted.

While this method is in course of being proved, the company is satisfied with it so far as it had been tried. In some wells an increase in production has been effected, but a big point in its favor is the decreased cost of operation. The specific gravity of the fluid lifted being lowered by skimming, less power is required and less tubing and rods and cost of settling out water in tanks is correspondingly reduced.

LANSING, MICH., Sept. 5.—The Arrow Oil Co., which is composed of local men, handling Sun Oil Co. products, recently furnished neat blue and white uniforms to its employes. The company is expanding rapidly in this territory and is building new stations and storage facilities constantly, according to Myron Calhoun, station man for the company.

The company holds monthly meetings of the management and men at a local hotel, where "eats" with all the trimmings occupy a part of the program, according to Mr. Calhoun.

GREENSBURG, PA., Sept. 5.—The Boarts Gasoline & Oil Co. has been incorporated here with a capital of $25,000, to conduct a wholesale and retail business in gasoline, kerosene and motor oils in Westmoreland county. Officers are: H. H. Boarts, president; I. N. Boarts, treasurer; R. M. Levis, secretary.

"Truckmen Are Peddlers" Says The State

Staff Special

MADISON, WIS., Sept. 5.—"A person going from place to place and from house to house selling, or offering for sale, merchandise of any kind is a peddler; and that includes a tank wagon driver." Reasoning thus, C. B. Ballard, the head of the department of revenue collection in Wisconsin has been successful in getting several oil companies in the state to take out peddlers' license for their tank wagon drivers. Others refuse to do it.

Mr. Ballard defended his position on the question before the Wisconsin Oil Jobbers' Association on Aug. 20 in Madison. He is backed up by a ruling of the state attorney general. After he had finished the Wisconsin jobbers gave him a vote of thanks for making a noble defense of a poor piece of legislation.

The speaker related that the origin of the law was to protect local merchants. There was a time in Wisconsin, and other states, too, when property owners and tax payers were considered entitled to protection by those in authority.

The peddler's tax was not designed as a revenue getting measure. It was a barrier to help keep out foreign merchants. Men without property burdens, taxes and other costs incidental to local operation were taxed for exercising their advantages. They had to pay the state for the right to come into a community and take the business that naturally would go to the local merchant.

Things Have Changed

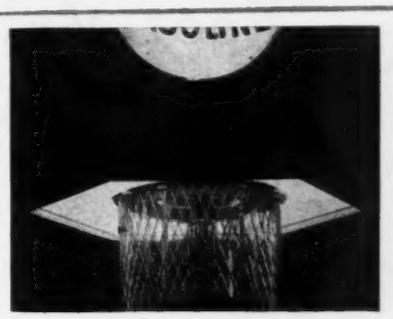
The law is evidently quite old, for its provisions revive days of the modern business man's childhood when strong dark men used to plod the country roads with packs on their backs and sell dry goods and notions. Now pack peddling is an extinct industry, but the laws to regulate it are still on the statute books. A foot peddler pays $20 a year in Wisconsin, a man with a push cart pays $30, and a man with a one-horse conveyance pays $45, while a merchant with a two-horse conveyance or bigger must pay $75 a year. The oil companies' trucks fall in the last class.

For a long time there was no complaint at the oil companies, Mr. Ballard says. A tank wagon was considered a delivery wagon of a merchant who owned his property locally, paid his taxes and otherwise shared in the expense of having an "abiding city." But now the tank wagon driver is a peddler.

There is no way around it under the ruling of the attorney general's department. The Standard Oil Co. of Indiana is going to be brought into court to show why it should not pay a peddler's tax in Wisconsin right soon. Mr. Ballard has forgotten exactly when. But it is on the docket.

The ice man motors through the suburbs and reads cards in windows. Set

Leads the World in brilliant Night Illumination



The Greatest Night Sales Producer in the World

TYPE 584

SPEEDIEST Visible Hand-Operated Pump made. Double cylinders 10 and 5 gallon bowls. Smooth, noiseless operation. Milwaukee-patented interlocking valves. Double indicators inside of bowl.

NO other pumps have such wonderful trade-attracting appeal at night as MILWAUKEE Visibles, Motor, Air or Hand Operated. Yet you can appreciate the importance of this feature, knowing that 37% of the day's business is done after dark.

Scientific lighting, exclusive to MILWAUKEE, makes these fine pumps stand out as beckoning beacons to all passing motorists. Gasoline appears crystal *water-white*,—pure and potent.

MILWAUKEE-equipped stations are busy day and night. They serve the public superlatively—quickly, accurately and dependably with their honest operation, smooth, fast performance, and long-period, non-depreciating reliability.

Buy MILWAUKEE with the utmost confidence of getting the finest features and workmanship to give your trade matchless service. Write TODAY for the *unusually low prices* and details.

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New York: *270 Madison Ave.* Pittsburgh: *327 Oliver Bldg.*
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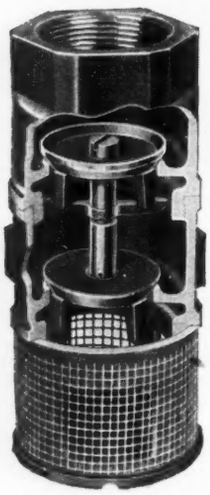

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In addition to the wing guides on the discs, the disc stems serve as additional guides for each other assuring perfect seating of the discs.

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Buckeye Foot Valves (both Single and Double Poppet Types) are used extensively by oil companies and are giving universal satisfaction.

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at different angles they mean different things, so the ice man really fills orders. The customer solicits him; he does not solicit. He is no peddler.

The milk man gropes onto the back stoops of his customers in the early morning in the dark of the moon and leaves a full bottle for each empty one on the sill behind the screen door. His goods are already sold when he leaves the plant in the morning. He is no peddler.

The farmer drives down the residence street in a Ford truck, bellowing through a tin horn, telling the housewives that he has fresh roasting ears and watermelons. But the farmer raises his stuff, he just disposes of surplus. He does not buy and sell. No! He is no peddler.

But the tank wagon driver fares forth like the others, into the suburbs and has to say "Hello there Bill, how much gas do you want?" So he is a peddler. Even if he does not see Bill at all, but gets off his tank truck and shakes the barrel to see how near empty it is, and fills it up, he is still a peddler for there is no order given.

Mr. Ballard sets forth the foregoing interpretations of the law in answer to questions by the oil men. He acknowledges that the tank truck in town is not plying a peddler's trade. It serves stations owned by the same man who owns the tank wagon. That is alright. But when they start serving somebody else, that's all wrong and they must pay.

The Medicine Man

It was the venders of patent medicine that included the oil companies in the peddler list, Mr. Ballard relates. The law takes toll of the men who drive out in the country preying on the ignorance and superstition of the farmers. Those who sell poisonous pills and potions to be misappropriated without prescription for every alleged cough and kidney trouble, are considered peddlers. These "docs" have "Shoo-Fly" for sale and some of the oil companies sell cattle spray also. The competition brought the complaint.

Mr. Ballard read a letter from a medicine man who urged him to go on and get the money from the oil men too. Mr. Ballard has nothing to say in defense of the law nor the manner in which it is interpreted. He states that he is only an executive officer and his duty is to carry out the laws, not to make them or change them.

LANSING, MICH., Sept. 5.—Bruce J. Maguire, formerly manager of the Michigan division of the National Refining Co., has entered the jobbing business for himself here. He opened his first station on Aug. 23 and sold 7000 gallons of gasoline on that day, according to Jay Klump, assistant sales manager of the National Refining Co. at Kalamazoo.

ON THE LAZY BENCH

"May 27, stranded a line trying to pull fish. May 28, stranded second line trying to pull fish. May 29, unable to back off any of the fish. May 30, went in with four-inch righthand pipe and backed off thirty-seven stands, leaving seven stands and a single in the hole. June 5, backed off one joint of fish, leaving one stand drill collar and bit. June 9, backed off two joints of fish. June 12, backed off drill collar. June 14, rimmed hole down to bit. June 18, ran in with die collar and removed bit, leaving hole entirely clean."

IT'S THE monthly statement.
* * *
OF THE oil well.
* * *
I INVESTED in.
* * *
AND I don't know.
* * *
IF THEY'RE blackjack.
* * *
OR PLAYING blackjack.
* * *
OR WHAT it is.
* * *
FOR THERE isn't a word.
* * *
ANYWHERE IN it.
* * *
ABOUT OIL.
* * *
AND IT was oil.
* * *
THAT THEY told me.
* * *
THEY WERE drilling for.
* * *
AND IT seems now.
* * *
THAT WHAT they're doing.
* * *
IS MOSTLY confined.
* * *
TO HAVING trouble.
* * *
WITH REBELLIOUS fish.
* * *
EXCEPTING.
* * *
THAT WHERE it says.
* * *
THEY HAD seven stands.
* * *
AND A single.
* * *
IN THE hole.
* * *
AND THEY must have been playing.
* * *
WITH THE joker.
* * *
AND THE deuces all wild.
* * *
AND EVERYTHING.
* * *
AND THEY must have won.
* * *
FOR IT says.
* * *
THAT THEY cleaned the hole.
* * *
AND IF they did.
* * *
I WANT my bit.
* * *
OR A fish.
* * *
OR SOMETHING.
* * *
I THANK you.
* * *

Cleve. News—K. C. B.

By Their Fruits

A rooster discovered an ostrich egg and rolling it into the hen house said, "Now, ladies, I do not want to embarrass you, but here's a sample of what other folks are doing."

—Pure Oil News

x x x

She was a dainty young thing, dressed in the latest fashion, and as she tripped into the office Raymond, the office boy, gasped, then grinned.

"Yes, Miss?" he asked, rather impertinently, as she came to a standstill before him.

"Could you tell me if Mr. Blockwood is in?" she asked.

Raymond nodded and pointed vaguely over his shoulder at the open door.

The girl hesitated for a moment.

"Do you know if he is engaged?" she inquired.

The boy looked astonished.

"Engaged?" he almost shouted. "Engaged! Why, he's married and got four kids!"

—Magnolia Oil News

x x x

Foiled

Nurse—"And did you enjoy Sunday School?"

Bobbie—"I was just going to when the teacher saw me."

—Pennico News

x x x

A formal dinner is incomplete without nuts. Invite a few.

—Union Oil Bulletin

Efficiency Plus

"That efficiency expert makes it a rule to search five minutes—no more and no less—when he loses a golf ball."

"It's a good rule, too. I played with him once when he lost a ball, and we found three in the five minutes."

—Marland Service Man

x x x

The Hips Have It

Gee—I see Sadie has a job in the chorus.

Goo—Sure, and she's getting fifty per week. All she does is shout "Hip, hip, hurray."

Gee—Oh. She gets ten bucks for her "hurray" and the other forty for her "hips."

—Pure Oil News

x x x

The teacher was discussing the rhinoceros family with her class and then said: "Now, someone name some things that are very dangerous to get near to and that have horns."

"Automobiles!" promptly replied little Jimmy.

—Magnolia Oil News

x x x

Everybody In

"I see in the paper that a widower with nine children out in Nebraska has married a widow with seven children."

"That was no marriage. That was a merger."

—Marland Service Man

PRODUCERS and REFINERS CORPORATION

PAROO PETROLEUM PRODUCTS

PRODUCERS - REFINERS
MARKETERS

"A Dependable Source of Supply"

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Chicago — Waterloo
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Vulcan Oil Refining Company

General Offices-Refining Works
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Refiners of Pennsylvania Petroleum

Manufacturers and Marketers of Highest Quality Petroleum Products. All Grades Gasoline, Kerosene, Lubricating Oil, Gas Oil, Fuel Oil and Compounded Oils.

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BRIGHT STOCKS

Tank Car and Mixed Carload Shipments

THE NATIONAL DUPLEX PUMP

Unusual performance over a long period has won for the National Duplex a position of dominance among dealers and refiners who know from experience what it will do. They know it helps make satisfied customers because it

—positively assures full measure

—and shows it through our patented sight glass

—filters the gasoline in full view

—automatically computes the amount of the purchase

—rings a bell for each full gallon

It benefits the owner and operator because

—it is a force-feed, visible pump, combining the advantages of both visible and piston pumps

—it eliminates delay for refilling the cylinder with each five or ten gallons

—its speed is unsurpassed by any pump, regardless of type, whether hand or power operated

—its exclusive cam-driven meter records with infallible accuracy every gallon sold

—it is more than a pump—it is a gasoline merchandiser

These are just a few of the benefits afforded by the National Duplex. Heretofore available only to a limited number, increased production now makes it available to any dealer, large or small. Let us tell you more of the details. Send for Bulletin No. 120.

THE NATIONAL

DAYTON,

REFINERY-TANK WAGON MARKETS

Advances Are Halted In Group Market As Buying Slackens

Staff Special

TULSA, Sept. 6

MID-CONTINENT refinery markets have been quiet during the past week and a slowing down in new buying has given the lighter products an appearance of softness. Previous advances in the heavier oils such as distillates, kerosene, gas and fuel oil have been held but products are not selling at higher levels than a week ago.

Labor Day appears to have been a signal to jobbers throughout the trade territory of Mid-Continent refiners to reduce their rate of buying and observe the weather and the rate of their sales to the public. At least so it looks to the refinery sales manager who has had more leisure to look out the window than at any time in recent months.

It was generally expected that business would be slow for a day or two after the week-end and the holiday but most refiners expected a rush of orders at the end of the week. The fact that orders have not materialized has caused some of the weaker refiners to worry a bit and begin to look around to find a way to dispose of some of their gasoline.

Few Plants Weaken

Until today the market has been firmly held on U. S. Motor gasoline at 8 to 8¼ cents. Some gasoline has been moving direct to the trade at the low figure and some at the high. But resale agents have found it impossible to shade the low figure. It was reported from several sources this morning that refiners in both Oklahoma and north Texas have been calling on the brokers and offering U. S. Motor at concessions ranging up as high as ¼ cent per gallon for immediate shipping instructions. Leading refiners throughout the district have not changed their prices, however, the weakness coming entirely from a few scattered small plants.

It is generally conceded that next week will be a critical period in the market. Trading during the first few days may be expected to determine the price trend. If jobbers should reenter the market in fairly large numbers and buy gasoline it is probable that the weak spots in the situation would be speedily strengthened and prices not fall below their present level. It is not likely, in view of the history of the market during the past week, that gasoline will advance much above its present level, however.

If next week is as dull as this it must be expected that gasoline prices will decline slightly, possibly ¼ cent per gallon. It is generally known that some of the large refiners in the Mid-Continent have determined to deplete their storage of gasoline before winter and that they will keep their prices at a figure which will get business.

August Gasoline Estimate

National Petroleum News estimate of U. S. gasoline production and consumption for August with estimated stocks for Sept. 1.

	Gallons
Stocks Aug. 1	1,466,558,939
Plus imports	12,240,614
Less exports	90,000,000
Plus domestic produc.	740,000,000
Less domestic consump.	820,484,414
Estimated st'ks Sep. 1	1,308,315,139
Decrease from Aug. 1	158,234,800

Unless there has been a definite change in this policy within the past few days it is likely that these companies will not permit the smaller refiners to cut in under them and get business. And, of course, if the large companies reduce their prices the market automatically falls to the level they fix.

Life has not been very pleasant for the broker of gasoline in Group 3 during the past month or two. A large number of refiners have had only one price on their goods. They have sold to both resale agent and jobber at the same price. When that condition exists the broker has slim picking. It is difficult for him to get the trade to pay him a commission on their purchases when they can get the goods at the same price direct from the manufacturer.

Generally speaking brokers will welcome weak spots in the market which will enable them to buy at concessions under the general level of prices.

Export Buying in Texas

In north Texas there has been a resumption of export business. The Galena Signal Oil Co. is reported to have bought around 1,000,000 gallons of 64-66, 375 end point gasoline for shipment before Sept. 15. It is understood that the company paid around 9½ cents per gallon.

Rumors were current that the Carson Petroleum Co. was seeking gasoline in Texas but it has not been ascertained whether any actual orders have been placed.

Refiners were disturbed today by an announcement that The Texas Co. had filed a complaint with the Interstate Commerce Commission regarding export rates to the Gulf. The petition opens up the whole subject of tariffs and refiners fear that they may lose some of the present advantage which they hold as a result of the competition of railroads among themselves. The railroads have made all of the present attractive export rates of their own volition.

An export outlet for Mid-Continent gasoline is highly important to this group. Exporters often improve the domestic market by taking out large quantities of surplus gasoline. Sags in the market have been quickly jerked out several times this year by important purchases running as high as 12,000,000 gallons in a few days.

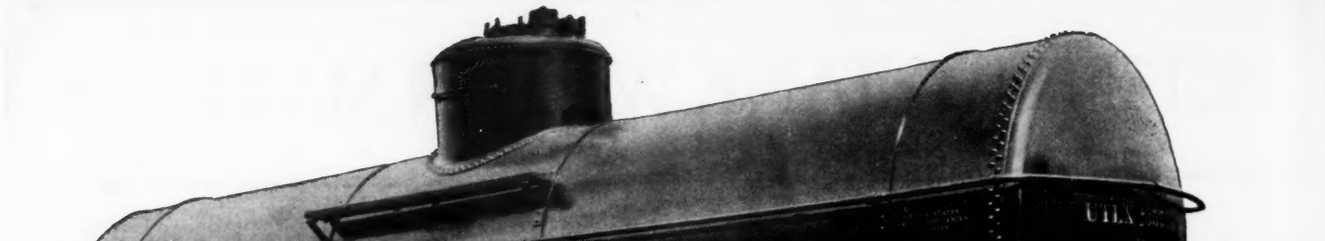
U. S. Consumption Below Normal

At a casual glance the current report of the U. S. Bureau of Mines covering manufacturing activities for July is encouraging. As a mater of fact, however, the tremendous consumption which is higher than it has ever been in the history of the country is still below normal, considering the number of automobiles in use. The reduction of 132,299,280 gallons in gasoline stocks leaves the total stocks still close to the billion and a half mark.

On page 34 of the Aug. 13 issue of this paper the writer estimated gasoline stocks on hand at refineries in the United States for Aug. 1, and an estimate of consumption and production for the month. The estimate was based on normal consumption for July being 5.39 per cent below normal in line with the experience of the first six months of the year. Production was estimated on the basis of a six-year average in percentage of gain over June.

The estimate was that gasoline stocks would be reduced 132,448,860 gallons to a total of 1,466,409,354 gallons. Consumption was placed at 797,989,724 gallons and production at 754,402,097 gallons. The Bureau of Mines report just issued shows a reduction in stocks of 132,299,280 gallons to a total of 1,466,588,939 gallons with consumption given as 794,030,832 gallons and production at 741,974,813 gallons.

On the same basis as that adopted in the previous forecast a table has been



Tank Cars

THE Cambria plant of Bethlehem Steel Company is equipped with every modern facility to build tank cars of every class—in any capacity—for the transportation of liquid or semi-liquid products.

Cambria Steel Tank Cars are built in conformity with the specifications in use on all American railways.

We have a standard design of tank car in capacities of 6,000, 8,000, 10,000, and 12,500 gallons of which we can make quick deliveries.

We will be glad to submit prints and specifications of these standard cars, or will just as readily give you an estimate on specifications to meet your own special requirements.

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New York Boston Philadelphia Baltimore Washington Atlanta Pittsburgh Buffalo Cleveland
Cincinnati Detroit Chicago St. Louis San Francisco

BETHLEHEM STEEL EXPORT CORPORATION, 25 BROADWAY, NEW YORK CITY. Sole Exporter of Our Commercial Products

BETHLEHEM
CAMBRIA STEEL TANK CARS

Refinery Markets On Light Oil Products

Pennsylvania, Oklahoma, North and South Texas, Louisiana, Arkansas

GASOLINE AND NAPTHA

PENNSYLVANIA	Prices Sept. 8	Prices Sept. 1	Prices Aug. 25
52-54 Naptha	11 –11½	11¼–11½	11 –11¼
54-56 Naptha	11½–11¾	11¾–12	11¾–11½
58-60 Gasoline	11½–12	11¾–12	11¾–11¾
60-62 Straight-run gasoline	12½–13	12¾–13	12¼–12¾
62-64 Straight-run gasoline	13½–14	13¾–14	13½–14
64-66 Straight-run gasoline	14 –14½	14 –14½	14 –14½
68-70 Straight-run gasoline	16 –16½	16½–17	–16½
68-70 Blend, 437 E. P.	11 –11½	10½–11	10½–11
64-66 Blend, 437 E. P.	11 –11½	10½–11	10½–11
60-62 Blend, 437 E. P.	11 –11½	10½–11	10½–11
68-70 Blend, 420 E. P.	11¾–12	11 –11¾	11 –11¾
68-70 Blend, 400 E. P.	–13		
OKLAHOMA			
48-50 450 E. P. naptha	7¼– 7½	7¼– 7½	7⅛– 7⅛
50-52 450 E. P. naptha	7⅛– 7½	7⅛– 7¼	7⅛– 7⅛
56-58 450 E. P. gasoline	7½– 7¾	7¾– 8	7⅜– 7⅞
58-60 450 end point	7¾– 8	7⅞– 8⅛	
58-60 U.S.Motor437 E.P.131i.b.p.	7⅞– 8¼	8 – 8¼	– 8
60-62 400 E. P. gasoline	9 – 9¼	9 – 9¼	8¾– 9¼
64-66 375 E. P. gasoline	9½–10	9½–10	9½– 9¾
68-70 350 E. P. gasoline	10½–10¾	10½–10¾	10¼–10½
NORTH TEXAS			
48-52 450 E. P. naptha	7¼– 7½	7½– 7¾	7¼– 7½
56-58 450 E. P. gasoline	7½– 7¾	7¾– 8	7⅜– 7⅝
58-60 450 E. P. gasoline	7⅝– 8	7¾– 8	7½– 7¾
58-60 U. S. Motor gasoline	7¾– 8¼	8 – 8¼	7¾– 8
60-62 400 E. P. gasoline	9 – 9¼	9 – 9¼	8¾– 9
64-66 390 E. P. gasoline	9¼– 9½	9¼– 9½	9 – 9¼
64-66 375 E. P. gasoline	9½– 9¾	9⅜– 9¾	9¾– 9½
68-70 350 E. P. gasoline	10¼–10½	10¼–10⅜	10 –10¼
NORTH LOUISIANA			
58-60 450 E. P. gasoline	8 – 8¼	8 – 8¼	8 – 8¼
58-60 437 Navy Gasoline	8¼– 8½	8¼– 8½	8¼– 8½
64-66 390-400 E. P. Gasoline	9½– 9¾	9½– 9¾	9½– 9¾
ARKANSAS			
58-60 450 E. P. gasoline	8⅛– 8⅜	8 – 8¼	8 – 8¼
58-60 Navy gasoline	8⅜– 8⅝	8¼– 8½	8¼– 8½
64-66 375 E. P. gasoline	9½– 9¾	9½– 9¾	9¼– 9½

NATURAL GASOLINE

OKLAHOMA	Prices Sept. 8	Prices Sept. 1	Prices Aug. 25
Grade A, 73-78 375 E.P.,90% Rec.	8¼– 9	8½– 8¾	8 – 8¼
Grade B, 76-82 375 E.P.,85% Rec.	– 8¾	8¼– 8½	7¾– 8
Grade C, 80-88 350 E.P.,78% Rec.	– 8¾	8¼– 8½	7¾– 8
Grade D, 88-92 350 E. P.	– 8¾	8¼– 8½	7¾– 8

(Motor Natural Gasoline—Blends)

OKLAHOMA	Prices Sept. 8	Prices Sept. 1	Prices[1] Aug. 25
Grade 1, 58-62 437 E.P.,91% Rec.	8 – 8¼	8 – 8¼	7¾– 8
Grade 2, 58-62 450 E.P.,90% Rec.	8 – 8¼	8 – 8¼	7¾– 8
Grade 3, 64-66 440 E.P.,88% Rec.	8 – 8¼	8 – 8¼	7¾– 8
Grade 4, 66-70 435 E.P.,85% Rec.	8 – 8¼	8 – 8¼	7¾– 8
NORTH TEXAS			
Grade A, 72-78 90% Rec.*	– 8¼	8 – 8¼	– 8
Grade B, 76-82 85% Rec.*	8¼– 8¾	8 – 8¼	7¾– 8
Grade C, 80-88 78% Rec.	8½– 8¾	8¼– 8½	7¾– 8

*F. O. B. Breckinridge.

(Motor Natural Gasoline—Blends)

Grade 1, 58-62 437 E. P.	8 – 8¼	8 – 8¼	7½– 7¾
Grade 2, 58-62 450 E. P.	8 – 8¼	8 – 8¼	7½– 7¾

BURNING OILS

PENNSYLVANIA			
45 Water White	6¾– 7	6¾– 7	6¼– 6⅜
46 Water White	7¼– 7½	7¼– 7½	6¾– 7
47 Water White	7¾– 8	– 7¾	7¼– 7¾
300 Burning Oil	7¼– 7½	7 – 7¼	7 – 7¼
OKLAHOMA			
40-42 Prime White Dist	4½– 4½	4½– 4½	4 – 4¼
41-43 Water White	4½– 4¾	4½– 4¾	4⅜– 4⅝
42-44 Water White	4¾– 5	4¾– 5	4⅝– 4⅞
NORTH TEXAS			
40-42 Prime White Distillate	4⅜– 4⅜	4⅜– 4⅜	4 – 4¼
41-43 Water White Kerosene	4½– 4¾	4½– 4¾	4¼– 4½
42-44 Water White Kerosene	4¾– 5	4¾– 5	4½– 4¾
38-40 Straw	3½– 3¾	–	3¼– 3⅜
NORTH LOUISIANA			
41-43 Water White Kerosene	4½– 4¾	4½– 4¾	4¼– 4½
ARKANSAS			
41-43 Water White Kerosene	4¾– 5	4¾– 5	4½– 4¾
42-44 Water White Kerosene	5 – 5¼	5 – 5¼	4¾– 5

Above prices are f. o. b. refinery in tank car. They are the prices at which the bulk of the products on the open market move. Whoever has knowledge of any open market prices on any considerable quantity of goods differing from the foregoing, will favor us with this information.

prepared showing consumption during August and stocks at the end of the month. This table uses the same percentage of 5.39 below normal for consumption and a decrease of 0.27 per cent in production. Exports are reduced to 90,000,000 gallons and imports are left at the average for the first six months of the year.

It will be noted that the estimates for consumption for August is 26,000,000 gallons above the actual figures for July and will represent a new consumption peak if reached. Production is reduced also with the result that a withdrawal of 158,000,000 gallons from storage is forecast, bringing total reserves down to 1,308,000,000 gallons. It is likely that this figure will be near the low point in stocks for the year. Withdrawal during September and succeeding months are generally not large.

The current report of the Bureau of Mines and the accompanying estimate point a strong moral to the refining industry that production of gasoline during the fall and winter months must be reduced if the industry is to escape entering 1925 with a billion and a half gallons on hand which must be carried until next spring before it can be moved.

A genuine shut-down movement among refiners would do much to insure that next year's markets will not be as disastrous to the manufacturer as those of 1923 and 1924.

Natural Gasolines Scarce

Natural gasoline is the only product which has strengthened materially during the week. Prices have advanced further as buyers have searched the field for stray cars which might have been missed in previous canvasses of the area. Grade A has sold as high as 9 cents per gallon with other products in proportion. The whole range of the market from the bottom on Grade C to the top on Grade A is only a half cent per gallon.

The present shortage of natural gasoline is the first which has been apparent in the Mid-Continent for more than two years. The last shortage was in the spring of 1922 when Grade A sold as high as 23 cents per gallon after a long period in which exporters were constnatly in the market for both 64 and Navy gasoline.

The chief reason for the shortage in natural gasoline today is probably the fact that refiners have been drawing on their storage constantly for three months and have been using large quantities of the natural to replace light fractions of the stored motor fuel which evaporated. It is known that some of the gasoline sold recently has been in refinery storage for more than a year.

At present prices it is impossible for the refiner to rerun his stored gasoline before shipping it to his customers. His other alternative is to tone it up to usual specifications.

Manufacturers of natural gasoline generally admit that the market is too high for refiners to use much more natural gasoline under present conditions. They believe that prices cannot advance much above their present level before refiners will revise their methods of operation and do without the light material. It is known that one large refiner was unable to get 90 cars of gasoline which he needed for September and is having to change his method of procedure. Several refiners have already refused to pay current prices.

Despite the high market today it is predicted by manufacturers that prices will not sag much below their present level during the remainder of the month. It is estimated that at least 75 per cent of all the natural gasoline to be made in the Mid-Continent during September has been sold in advance of production. Many large companies have sold their entire output. It is stated that only the smaller concerns which make it a

Every item of equipment that enters into the construction of the Dubbs Cracking Process will be furnished through us at our naked cost plus 2%, the direct cost of getting and assembling the materials We even pass on to you all the cash discounts we receive

We furnish all the equipment if wanted, merely as an accommodation, but you are under no obligation to buy a single item through us We will furnish you with the plans, specifications, sources of supply, and costs You can do your own buying if you wish When you see the cost of each item you may wonder why you can't get the same prices All this we do to facilitate construction and keep down the cost of installation There are no contractors' profits on the job

The result is not only the

(1) Lowest cost of installation per barrel of gasoline produced, but

(2) Also the lowest cost per gallon of gasoline produced

The low cost of gasoline is the result of the extraordinary and unique efficiency of the process

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Owners of the Dubbs Process
312 South Michigan Ave
Chicago Illinois

Refinery Markets On Lubricants, Heavy Oils

Pennsylvania, Oklahoma, North and South Texas, Louisiana, Arkansas

NEUTRAL OILS

PENNSYLVANIA	Prices Sept. 8	Prices Sept. 1	Prices Aug. 25
(Viscous Test 70)			
220 Vis. No. 3 Assoc. Filt.	–23	23 –24	23 –24
200 Vis. No. 3 Assoc. Filt.	20½–21½	20½–21½	20½–21½
180 Vis. No. 4 Assoc. Filt.	18½–19½	18½–19½	18½–19½
150 Vis. No. 3 Assoc. Filt.	16½–17½	16½–17½	16½–17½
(Non-Viscous)			
34 350-360 Flash	7 – 7¼	6¾– 7¼	6¾– 7¼
36 Miners Neutrals 300-305 Flash.	6½– 6¾	6½– 6¾	6½– 6¾
OKLAHOMA			
(Viscous Test 100)			
70 Vis. at 100°F. No. 2½–3 color.	4¼– 4¾	4¼– 4¾	4¼– 4¾
100 Vis. at 100°F. No. 2 color	5 – 5½	5 – 5½	5 – 5½
100 Vis. at 100°F. No. 2½–3 color.	4½– 5	4½– 5	4½– 5
150 Vis. at 100°F. No. 3 color	8½– 9	8½– 9	8½– 9
150 Vis. at 100°F. No. 4 color	8 – 8½	8 – 8½	8 – 8½
180 Vis. at 100°F. No. 3 color	9½–10	9½– 10	9½–10
180 Vis. at 100°F. No. 4 color	9 – 9½	9 – 9½	9 – 9½
180 Vis. at 100°F. No. 5 color	8½– 9	8½– 9	8½– 9
180 Vis. at 100°F. No. 6 color	8 – 8½	8 – 8½	8 – 8½
200 Vis. at 100°F. No. 3 color	11½–12	11½–12	11½–12
200 Vis. at 100°F. No. 4 color	11 –11½	11 –11½	11 –11½
200 Vis. at 100°F. No. 5 color	10½–11	10½–11	10½–11
200 Vis. at 100°F. No. 6 color	10 –10½	10 –10½	10 –10½
220 Vis. at 100°F. No. 3 color	12½–13	12½–13	12½–13
220 Vis. at 100°F. No. 4 color	11¾–12¼	11¾–12¼	11¾–12¼
220 Vis. at 100°F. No. 5 color	11 –11½	11 –11½	11 –11½
220 Vis. at 100°F. No. 6 color	10¾–11¼	10¾–11¼	10¾–11¼
240 Vis. at 100°F. No. 3 color	14½–15	14½–15	14½–15
240 Vis. at 100°F. No. 4 color	14 –14½	14 –14½	14 –14½
240 Vis. at 100°F. No. 5 color	13 –13½	13 –13½	13 –13½
240 Vis. at 100°F. No. 6 color	12¾–13¼	12¾–13¼	12¾–13¼
280 Vis. at 100°F. No. 3 color	16½–17	16½–17	16½–17
280 Vis. at 100°F. No. 4 color	15½–16	15½–16	15½–16
280 Vis. at 100°F. No. 5 color	14½–15	14½–15	14½–15
280 Vis. at 100°F. No. 6 color	13½–14	13½–14	13½–14
300 Vis. at 100°F. No. 6 color	17½–18	17½–18	17½–18
SOUTH TEXAS			
(Viscous Test 100; cold test 0)			
100 Vis. No. 2 Color Unfilt. Pale.	8 – 9	8 – 9	8 – 9
150 Vis. No. 2½ Color Unfilt. Pale.	10 –11	10 –11	10 –11
200 Vis. No. 3 Color Unfilt. Pale.	12½–13½	12½–13½	12½–13½
300 Vis. No. 3 Color Unfilt. Pale.	14½–15½	14½–15½	14½–15½
500 Vis. No. 3½ Color Unfilt. Pale.	16½–17½	16½–17½	16½–17½
750 Vis. No. 4 Color Unfilt. Pale.	22 –23	22 –23	22 –23
200 Vis. No. 2 Filt. Pale	22½–23½	22½–23½	22½–23½
300 Vis. No. 2 Color Filt. Pale	25½–26½	25½–26½	25½–26½
500 Vis. No. 2½ Color Filt. Pale.	29½–30	29½–30	29½–30
750 Vis. No. 2½ Color Filt. Pale	39½–40	39½–40	39½–40
200 Vis. No. 5½ Color Red Oil	10½–11½	10½–11½	10½–11½
300 Vis. No. 5½ Color Red Oil	12½–13½	12½–13½	12½–13½
500 Vis. No. 6 Color Red Oil	14½–15½	14½–15½	14½–15½
750 Vis. No. 6 Color Red Oil	19½–20½	19½–20½	19½–20½

CYLINDER STOCKS

OKLAHOMA			
190-200 Vis. at 210 Bright Stock.	29 –34	29 –34	29 –34
150-160 Vis. at 210 Bright Stock.	26 –30	26 –30	26 –30
Medium Filtered Stock	16½–18	16½–18	16½–18
600 Steam Refined Olive Green	7 – 7½	7 – 7½	7 – 7½
600 Steam Refined Dark Green	5½– 6½	5½– 6½	5½– 6½
Black Oil	3¾– 4	3¾– 4	3¾– 4

PENNSYLVANIA	Prices Sept. 8	Prices Sept. 1	Prices Aug. 25
600 Steam Refined	17 –17½	16½–17	–16½
635 Steam Refined	21 –22	19½–20½	19½–20½
650 Steam Refined	22 –23	22 –23	22 –23
600 Flash	27 –28	27 –28	27 –27½
600 Warren E	–22	21½–22	–22
600 Oil City E	–22	21 –21½	19¾–20
600 Filtered D	26½–27	26½–27	26½–27
Cold Test Stocks (bright filtered)	34 –36	34 –36	33 –35
Cold Test Stock (dark filtered)	32 –34	32 –34	31 –33
Black Oil	– 7	– 7¼	7 – 7¼

WAX

PENNSYLVANIA			
(Per Pound New York)			
122-124 White Crude Scale	– 5¾	5¾– 5¾	– 5½
124-126 White Crude Scale	– 5¾	– 5¾	5½– 5½
OKLAHOMA			
(Per Pound Group 3)			
124-126 White Crude Scale	5¼– 5½	5¼– 5½	5 – 5¼

FUEL OIL

PENNSYLVANIA			
36-40 Fuel Oil	5 – 5¼	5 – 5¼	5 – 5¼
30-34 Fuel Oil	4½– 5	4½– 4¾	4½– 4¾
OKLAHOMA			
38-40 Straw Distillate	3½– 3¾	3½– 3¾	3¾– 3½
36-38 Straw Distillate	3¼– 3½	3¼– 3½	3¼– 3½
32-36 Gas Oil (Gal.)	2¾– 3	2¾– 3¼	2¾– 2¾
24-26 Fuel Oil (bbl.)	.90– .95	.90– .95	.85– .90
28-30 Fuel Oil	1.00–1.10	–	–
Fuel Oil, buyers, cars (bbl.)	.90– .95	.90– .95	.85– .90
20-22 Fuel Buyers	87½–.92½	.85 – .90	82½– .85
40-50 Asphalt Content Road Oil	.90– .95	.95–1.00	.90– .95
50-60 Asphalt Content Road Oil	.95–1.00	1.00–1.05	.95–1.00
60-70 Asphalt Content Road Oil	1.00–1.10	1.05–1.15	1.00–1.10
NORTH TEXAS			
38-40 Straw Distillate	3½– 3¾	3½– 3¾	3½– 3½
32-36 Gas Oil (gal.)	2¾– 3	2¾– 3	2¾– 2¾
24-26 Fuel, per bbl	.85– .90	.85– .90	.80–.82½
South Texas Fuel	1.50–1.60	1.50–1.60	1.50–1.60
South Texas Gas Oil	3¾– 4	3¾– 4	3¾– 4
NORTH LOUISIANA			
32-36 Gas Oil (Gal.)	3 – 3¼	3 – 3¼	3 – 3¼
22-26 Fuel Oil (bbl.)	.90– .95	.90– .95	.90– .95
ARKANSAS			
40-42 P. W. Dist			
38-40 Distillate	– 3½	3¾– 3¾	3¼– 3½
32-36 Gas Oil	– 3¼	3¼– 3¼	3¼– 3¼
22-26 Refinery Fuel Oil	90– .95	90 – .95	87½–.92½
Smackover Crude Fuel	80– .85	80 – .85	– .80
East Field Crude Fuel	80– .85	80 – .85	– .80

Above prices are f. o. b. refinery in tank car. They are the prices at which the bulk of the products on the open market move. Whoever has knowledge of any open market prices on any considerable quantity of goods differing from the foregoing, will favor us with this information.

policy to sell as they go, will have gasoline to offer.

Blended gasolines have virtually disapeared from the market as a result of high natural gasoline and naptha prices.

Lubricating oils are quiet. Movement is reported as being fair and there is little material being offered out at concessions under list prices. Bright stocks are still scarce and firm. Steam refined oils are holding.

Wax is still sold up far in advance and buyers are seeking new material for later delivery at advancing prices.

Kerosene has slowed down to some extent during the past week. Price advances have been halted for the time being at least and 41-43 is still quoted at 4½-4¾ cents with 42-44¼ cent higher. Kerosene is being held by most refiners for higher prices and there has been no tendency to seek orders.

Distillate business has been less pressing. Many jobbers appear to have fair sized stocks on hand for their early fall business. Spot distillate business is not due to boom for another week or two unless there should happen to be a cold snap.

Gas oil is slightly more plentiful and some odd cars have been picked up here and there at 2¾ cents. The average sales are being made at ⅛ cent more with some being made at 3 cents. Fuel oil is still scarce with little or none available below 90 cents per barrel.

Scattered Showers Seen In Prospect

CHICAGO, Sept. 8.—Scattered showers and slightly changing temperatures will characterize the weather throughout Standard Oil Co. of Indiana territory this week.

Along the Ohio river valley rains will come toward the middle and last of the week, with the first few days fair and cool. The first and middle of the week will be wet in the Great Lakes region, with normal temperatures throughout. In the upper Mississippi and lower Missouri river valleys, scattered showers will occur during the middle and last of the week with temperatures even and slightly above normal.

Except for a wet Labor Day in the northeast quarter of the United States, and a general rain in the Great Lakes region on Thursday, last week was fairly dry and temperatures were normal. Motoring was general and jobber gallonage was good but not what it might have been had the holidays been more pleasant. The rain on Monday was heavy in spots in Indiana territory, there being more than an inch rainfall in several places.

Gasoline Price Turning Downward; Other Oil Products Firm

CHICAGO, Sept. 6.—The call for gasoline has been smaller since Labor Day than before, and consequently cheaper than before. The market last week was unduly stimulated. The upturn in price in the early days improved the volume of sales because jobbers had been buying hand-to-mouth for weeks and they obeyed the impulse and got into the rising market. Of course they expected good business on Labor Day too. Evidently they over estimated their requirements.

Holiday gallonage did not come up to expectations, because is rained all over Standard Oil Co. of Indiana territory for one reason. And when the rain and the holiday excursions were over the market flurry was over also. Whereas marketers came to their offices in Chicago expecting to get 8½ cents for U. S. Motor gasoline on Tuesday, it was being offered freely at 8 cents to the jobbers on Friday, even the latter price was shaded Saturday. Gasoline, however, is the weakest item in the oil line.

Kerosene is strong and scarce at 4½ to 4¾ cents. Distillate suitable for domestic fuel also is strong and scarce, the price being less than 1 cent under kerosene. Today 3¾ appears to be bottom on 38-40. Jobbers generally are stocking up on light oil fuels. They are not bidding up the market but simply taking advantage of the reasonable spot price and buying a car occasionally. They are storing it in gasoline tanks for the most part, where it can wait until January with little or no loss by evaporation and take advantage of all upward price revisions.

Gas oil has not been active over the week. Buyers have been out of the market apparently, and refiners are not thrusting their material upon the market when they have good reason to expect it to improve in price and demand also. The price at the close of this week is 3 cents, and higher quotations are not uncommon.

Fuel oil is strong and active. Refinery fuel of 24-26 gravity is easily marketed now for 90 or 95 cents a barrel, which is more nearly 80 per cent of the crude cost.

Marketers of specialties report that zero oils are active. The season is at hand when motorists begin to ask for lubricants that will stand the test of a cold northern winter and jobbers all over the northwest are preparing for it.

Pennsylvania Refiners More Cheerful As Most Products Are Active

CLEVELAND, Sept. 8.—More optimistic tone has been noticeable in the northwestern Pennsylvania refinery market in the last week. Demand for most of the products has been good, kerosene, cylinder stocks and paraffin wax being particularly good and the market for them consequently strong.

Movement of gasoline continues good but the future of motor fuel prices is still in doubt. Stocks of gasoline in the whole country are believed to be well in excess of a billion gallons. Stocks of gasoline are low in Pennsylvania but inventories in many other districts are large. Now that the peak of the consuming season is past, it is feared that gasoline stocks may be added to until the whole market structure is undermined as it was a year ago. Pennsylvania refiners have kept down their output this year to a point where output balanced with demand but their prices were of necessity in line with prices in other districts.

Cylinder stocks are in good demand and inquiries indicate good business over fall. Neutrals are still spotty in demand but prices have been holding up well. Several of the larger refiners report the clearing out of their stocks of neutrals but some say they have been less fortunate and still have sufficient stocks on hand to be willing to grant slight concessions in order to move them.

Kerosene is brisk. It required canvassing of the whole area last week to pick up a single carload for immediate shipment. Many refiners would make no promises of shipments earlier than a week or 10 days hence. Fuel oil movement is good and supplies are fairly low.

Paraffin wax also is active and some plants are sold out over the remainder of this year and into 1925.

Seeks To Restrain Issue Of Bonds

TULSA, Sept. 6.—George Beggs of Enid, a stockholder in the Oil State Refining Co. of that city, is seeking to restrain the company from selling a bond issue of $200,000 which was voted at a special meeting of stockholders held on Sept. 3. To achieve his purpose Mr. Beggs has filed an action in the district court of Garfield county demanding a restraining order and the appointment of receivers. Hearing has been set down for Sept. 13.

Proceeds of the bond issue planned by the majority of the stockholders was to effect improvements and give the company adequate operating capital.

Tank Wagon Prices Cover Wide Range

CLEVELAND, Sept 9.—From Independent sources, National Petroleum News has obtained the following tank wagon and service station prices of gasoline at which most of the goods moved are being sold at the following points:

Town	Tank Wagon	Service Station	Date Price Obtained
Kansas			
Abilene	11.9	15.9	Aug. 15
Atchison	13.9	15.9	Aug. 16
Anthony	15.9	17.9	Aug. 10
Cimarron	16.1	18.1	Aug. 16
Coffeyville	15.6	17.6	Aug. 19
Dodge City	15.1	18.1	Aug. 16
Emporia	13.9	15.9	Aug. 21
Fort Scott	13.7	16.7	Aug. 18
Hutchinson	13	15	Aug. 18
Larned	16	18	July 30
Manhattan	13.9	16	Aug. 15
Ottawa	13.8	16	Aug. 21
Paola	11.8	13.8	Aug. 21
Pleasanton	11.9	15.9	Aug. 18
Parsons	13.6	15.6	Aug. 2
Pratt	13	15	Aug. 2
Satanta	16.2	18.2	Aug. 16
Topeka	12.9	16	Aug. 15
Wamego	13.9	16	Aug. 16
Wellington	13	15	Aug. 10
Wichita	13	15	Aug. 10
Michigan			
Adrian	16.7	18.7	Aug. 20
Calumet	17.2	19.2	Aug. 21
Coldwater	16.5	18.5	Aug. 20
Chesaning	16.9	18.9	Aug. 7
Constantin	16	....	Aug. 15
Dundee	16.7	18.7	Aug. 20
Grand Haven	16.6	18.6	Aug. 21
Hancock	16.9	18.9	Aug. 21
Hillsdale	16.5	18.5	Aug. 20
Hudson	16.6	18.6	Aug. 20
Kalamazoo	16.5	18.5	Aug. 20
Mendon	16.5	18.5	Aug. 22
Muskegon	16.7	18.7	Aug. 21
Milam	16.7	18.7	Aug. 20
Montrose	16.8	18.8	Aug. 7
Port Huron	16.9	18.9	Aug. 22
St. Charles	16.9	18.9	Aug. 7
Saline	16.7	18.7	Aug. 20
Saginaw	16.9	18.9	Aug. 20
Tecumseh	16.7	18.7	Aug. 20
Three Rivers	16.4	18.4	Aug. 22
White Hall	16.7	18.7	Aug. 21
White Pigeon	16.4	....	Aug. 15
Ypsilanti	16.7	18.7	Aug. 20
Minnesota			
Appleton	15.1	17.1	Aug. 20
Atwater	12.8	14.8	Aug. 20
Benson	16	18	Aug. 20
Bellingham	15.2	17.2	Aug. 20
Brown's Valley	16.2	18.2	Aug. 20
Blue Earth	14	16.8	Aug. 21
Clara City	13.4	15.4	Aug. 20
Dawson	15.1	17.1	Aug. 21
Fairmont	14	16.8	Aug. 21
Faribault	13	16	Aug. 22
Glenwood	16	18	Aug. 20
Graceville	16	18	Aug. 20
Good Thunder	14.8	16.8	Aug. 23
Jackson	14	16.8	Aug. 21
Judson	14.8	16.8	Aug. 23
Lake Wilson	14.8	16.8	Aug. 22
Morris	16	18	Aug. 20
Murdock	13.4	15.4	Aug. 20
Mankato	14.8	16.8	Aug. 23
Montgomery	12	15	Aug. 22
Nerstrand	13	16	Aug. 22
Pipestone	14.8	16.8	Aug. 22
Paynesville	13	15	Aug. 20
St. Cloud	13	15	Aug. 26
Willmar	13	15.4	Aug. 20
Winnebago	14	16.8	Aug. 22
Winona	10.9	12.9	Aug. 20

Globe Moves Offices

TULSA, Sept. 8.—General sales offices of the Globe Oil & Refining Co. have been moved to the seventh floor of the Atlas Life building here. Offices have been on the third floor. A. E. Landsittel is sales manager for the company.

Tank Wagon, Service Station Markets
Gasoline and Kerosene

BELOW are given in cents a gallon, the tank wagon price of gasoline without the special taxes levied against motor fuels by many states, the amount of the state taxes, the total tank wagon price, with tax added in and the service station or retail price of gasoline as quoted by the Standard Oil Companies in their various marketing territories. The right hand column is the tank wagon price of kerosene. By tank wagon price is meant the price to resale agents or dealers. Usually this price does not apply to sales to consumers from tank wagons.

Prices in effect September 8

S. O. NEW JERSEY TERRITORY

	Gasoline T.W.	Tax	Total	S.S.	Oil T.W.
Atlantic City, N.J.	17.5	0	17.5	*	13
Newark, N. J.	17.5	0	17.5	*	13
Annapolis, Md.	17	2	19	*	12
Baltimore, Md.	17	2	19	22	11
Cumberland, Md.	17	2	19	22	12.5
Washington, D.C.	17	2	19	21	12.5
Danville, Va.	17.5	3	20.5	*	13.5
Norfolk, Va.	17.5	3	20.5	22.5	13.5
Richmond, Va.	17.5	3	20.5	24	13.5
Roanoke, Va.	17.5	3	20.5	22.5	13.5
Petersburg, Va.	17.5	3	20.5	*	13.5
Charleston, W.Va.	17	2	19	22	13.5
Clarksburg, W.Va.	17	2	19	21	13.5
Keyser, W.Va.	17	2	19	*	13.5
Parkersburg, W.Va.	17	2	19	21	13.5
Wheeling, W.Va.	17	2	19	22	13.5
Williamson, W.Va.	17	2	19	*	13.5
Charlotte, N.C.	17	3	20	23	13.5
Hickory, N.C.	17	3	20	*	13.5
High Point, N.C.	17	3	20	*	13.5
Mt. Airy, N.C.	17	3	20	*	13.5
Salisbury, N.C.	17	3	20	*	13.5
Charleston, S.C.	17.5	3	20.5	23.5	14
Columbia, S.C.	17.5	3	20.5	22.5	14

*Dealers set own prices. S. O. New Jersey does not operate station.

S. O. NEW YORK TERRITORY

*New York City	18	0	18	20.5	13
Albany, N. Y.	16	0	16	18	13
Buffalo, N. Y.	15	0	15	18	13
Rochester, N. Y.	15	0	15	19	13
Syracuse, N. Y.	14	0	14	16	12
Boston, Mass.	18	0	18	20.5	12
Augusta, Me.	18	1	19	21.5	13
Manchester, N.H.	18	2	20	22.5	13
Burlington, Vt.	18	1	19	21.5	13

*In steel barrels.

ATLANTIC REFINING TERRITORY

Pittsburgh, Pa.	18	0	18	23*	14
Philadelphia, Pa.	18	0	18	23*	14
Allentown, Pa.	18	0	18	23*	14
Scranton, Pa.	18	0	18	23*	14
Altoona, Pa.	18	0	18	23*	14
Dover, Del.	18	2	20	23	14
Wilmington, Del.	18	2	20	23	14
Providence, R. I.	18	0	18	21	13
Springfield, Mass.	18	0	18	22	13
Worcester, Mass.	18	0	18	22	13
Hartford, Conn.	18	1	19	22	13
New Haven, Conn.	18	1	19	22	13
Boston, Mass.	18	0	18	21	13

*Contains 2-cent tax collected by retail dealer and paid by him directly to state.

S. O. OHIO TERRITORY

All Ohio points	16	0	16	18	14

S. O. KENTUCKY TERRITORY

Lexington, Ky.	14	3	17	20	14
Louisville, Ky.	13	3	16	18	12
Covington, Ky.	13	3	16	19	14
Clarksdale, Miss.	15	3	18	21	12
Jackson, Miss.	15	3	18	21	10
Natchez, Miss.	14.5	3	17.5	20.5	11.5
Vicksburg, Miss.	14.5	3	17.5	20.5	11.5
Birmingham, Ala.	17	2	19	21	14.5
Mobile, Ala.	16	2	18	20	12.5
Montgomery, Ala*	18	2	20	22	15.5
Atlanta, Ga.	16	3	19	23	13
Augusta, Ga.	18	3	21	23	13.5
Macon, Ga.	18	3	21	23	14.5
Savannah, Ga.	15	3	18	20	13
Jacksonville, Fla.	16	3	19	21	13
Miami, Fla.	18	3	21	23	14.5
Tampa, Fla.	16	3	19	21	13
Pensacola, Fla.	16	3	19	21	13.5

*Local privilege Tax of 1 cent on gasoline and ½ cent on kerosene at Montgomery included.

S. O. CALIFORNIA TERRITORY

Phoenix, Ariz.	20	3	23	26	21.5
Los Angeles, Cal.	14	2	16	19	15.5
Fresno, Cal.	15.5	2	17.5	20.5	17.5
San Francisco, Cal.	15	2	17	20	15.5
Reno, Nev.	18.5	2	20.5	23.5	19
Portland, Ore.	16	3	19	22	16.5
Seattle, Wash.	16	2	18	21	16.5
Spokane, Wash.	20	2	22	25	20.5
Tacoma, Wash.	16	2	18	21	16.5

S. O. LOUISIANA TERRITORY

	Gasoline T.W.	Tax	Total	S.S.	Oil T.W.
Camden, Ark.	16	4	20	22	13
Little Rock, Ark.	16	4	20	22	13
West Helena, Ark.	16	4	20	22	13
Alexandria, La.	15.5	2	17.5	20.5	13
Baton Rouge, La.	14	2	16	19	11.5
Lake Charles, La.	15.5	2	17.5	20.5	13
New Orleans, La.	13.5	2	15.5	18.5	9
Shreveport, La.	15.5	2	17.5	20.5	13
Bristol, Tenn.	18	2	20	22	13.5
Chattanooga, Tenn.	15	2	17	19	14.5
Knoxville, Tenn.	17.5	2	19.5	21.5	15
Nashville, Tenn.	16.5	2	18.5	20.5	13.5
Memphis, Tenn.	14	2	16	18	14

MAGNOLIA PETROLEUM TERRITORY

Muskogee, Okla.	11.5	2½	14	19	11
Oklahoma City	11.5	2½	14	19	10
Tulsa, Okla.	10.5	2½	13	16	10
Fort Smith, Ark.	13	4	17	20	12
Little Rock, Ark.	16	4	20	23	13
Texarkana, Ark.	14	4	18	21	13
Dallas, Tex.	11	1	12	16	10
El Paso, Tex.	11	1	12	14	12
Fort Worth, Tex.	9	1	10	12	11
Houston, Tex.	12	1	13	17	12
San Antonio, Tex.	12	1	13	16	10

S. O. INDIANA TERRITORY

Chicago, Ill.	16	0	†16	18	11
Decatur, Ill.	16.2	0	16.2	18.2	11.5
East St. Louis, Ill.	15.1	0	15.1	17.35	10.6
Joliet, Ill.	16.4	0	16.4	18.4	11.7
Peoria, Ill.	13	0	13	15	11.5
Quincy, Ill.	16.2	0	16.2	18.2	11.3
Indianapolis, Ind.	16.2	2	18.2	20.2	11.7
Evansville, Ind.	16	2	18	20	11.5
South Bend, Ind.	16.4	2	18.4	20.4	11.9
Detroit, Mich.	16.8	0	16.8	18.8	12.2
Grand Rapids, Mich.	16.7	0	16.7	18.7	12.1
Saginaw, Mich.	16.9	0	16.9	18.9	12.3
Madison, Wis.	16.2	0	16.2	18.2	11.5
Milwaukee, Wis.	15	0	15	18	11.3
La Crosse, Wis.	12.9	0	12.9	14.9	12.4
Minneapolis, Minn.	12	0	12	16	12.6
Duluth, Minn.	17.2	0	17.2	19.2	12.6
Mankato, Minn.	14.8	0	14.8	16.8	12.4
Des Moines, Ia.	14.5	0	14.5	16.5	11.9
Davenport, Ia.	11	0	11	14	11.9
Sioux City, Ia.	14	0	14	16	11.5
St. Louis, Mo.*	14.1	½	14.6	17.9	11
Kansas City, Mo*	10.9	1	11.9	16.9	10.3
St. Joseph, Mo*	15.5	½	16	18	10.9
Fargo, N. D.	15.3	1	16.3	18 3	14.6
Grand Forks, N.D.	17	1	18	20	14.9
Minot, N. D.	18.9	1	19.9	21.9	14.6
Pierre, S. D.	17	2	19	0	13.1
Huron, S. D.	16	2	18	20	13.1
Wichita, Kan.	13	0	13	15	9.8
Bartlesville, Okla.	14	2½	16.5	19.4	9.9

*Tax levied by city.
†Dumps of more than 100 gallons at 14¼c.

S. O. NEBRASKA TERRITORY

Crawford, Neb.	17	0	17	*	12.25
Omaha, Neb.	11	0	11	13	11.5
McCook	15	0	15	17	13
Norfolk	14.75	0	14.75	16.75	12
North Platte	16	0	16	18	12.75
Scotts Bluff	17.25	0	17.25	19.25	12.25

*Standard has no service station here.

CONTINENTAL OIL TERRITORY

Denver, Colo.	16	2	18	20	13.5
Glenwood Sp'gs. Colo.	20	2	22	*	17.5
Pueblo, Colo.	16	2	18	20	13.5
Basin, Wyo.	18	1	19	*	14
Casper, Wyo.	16	1	17	19	12
Cheyenne, Wyo.	17.5	1	18.5	20.5	13.5
Cody, Wyo.	19	1	20	*	15
Lander, Wyo.	18	1	19	*	14
Sheridan, Wyo.	20	1	21	23	16
Billings, Mont.	18.5	2	20.5	22.5	14.5
Butte, Mont.	20	2	22	24	15
Great Falls, Mont.	20	2	22	24	16
Helena, Mont.	20	2	22	24	16
Miles City, Mont.	19.5	2	21.5	23.5	15.5
Missoula, Mont.	20	2	22	24	16
Ogden, Utah	19.5	2½	22	24	17
Salt Lake City, Utah.	19.5	2½	22	24	17
Boise, Ida.	21.5	2	23.5	25.5	19
Idaho Falls, Ida.	21	2	23	25	18.5
Albuquerque, N.M.	19	1	20	22	15.5

*Continental has no service stations at these points.

Week's Price Changes Tank Wagon Market

Gasoline Reductions

Standard of New York—Buffalo t.w., s.s. 1 cent, Sept. 6.

* * *

Correction

BALTIMORE, Sept. 8.—Standard Oil Co. of New Jersey advises that service station price of gasoline at Richmond, Va. did not decline from 24 to 23.5 cents on July 19, as previously reported. It remained at 24 cents, which price went into effect on July 12.

Kerosene at Annapolis, Md. is 12 cents, instead of 12.5 cents as shown in the past several issues of this publication. The Standard maintains the 12 cent price on kerosene between Annapolis and Baltimore, but at all points south of Annapolis, it is 12.5 cents.

The Texas Co. Attacks Gulf Coast Rates

Staff Special

TULSA, Sept. 8.—The Texas Co. has filed a formal complaint with the Interstate Commerce Commission attacking export rates from various points to Port Arthur and Port Neches, Tex. The petition alleges violation of sections 1, 2 and 3 of the Interstate Commerce Act in that they are unjust and unreasonable, discriminatory and preferential.

The company seeks equal or lower rates from various points of origin not specificailly named to the ports where the company has its Gulf coast refineries and terminal shipping facilities.

Traffic managers of Group 3 and Texas refineries have just received copies of the complaint and have not had time as yet to study the rate structure complained of to ascertain just how the case may affect their interests. It is generally thought, however, that since the case throws open the whole question of export rates from the Mid-Continent that it may be highly important since the entire export rate structure has been built up as a result of competition among the railroads through voluntary announcements.

Some refiners fear that opening up the question may result in the Inter-State Commerce Commission ironing out any inequalities which may exist by raising some rates.

CHARLOTTE, MICH., Sept. 8.—Standard Oil Co. of Indiana will enter five fine floats in the parade scheduled for National Defense Day, Sept. 12, according to Cecil E. Morgan, cashier for the company. Mr. Morgan says "lots of work for all, but our time figured well spent." The company recently completed a drain rack at its filling station here.

Cylinder Oils Offered Freely In New York

By Special Correspondent

NEW YORK, Sept. 8.—Several foreign buyers were actively interested in the local petroleum market last week. Most purchases of these factors, however, were for lubricating oils and waxes. The recent reductions in lubricants has tended to stimulate foreign buying interest considerably and orders for from 500 to 3000 barrels were numerous.

Stocks of cylinder oils are fairly large, and as a result Pennsylvania 600 steam refined in barrels New York, was offered around freely at from 23 to 24 cents a gallon with indications that some of the big export buyers might do a trifle below the inside price on a firm bid for a large quantity. German buyers are taking a fairly good quantity of lubricating oil, and stocks in that country are generally conceded to be very light.

Spindle oils are rather flat and no sizable movements were uncovered. Paraffin oils, however, are in good, steady request on a basis of 24 cents, barrels, New York for 300 viscosity at 100 degrees. Black oil was flat and unchanged at 14 cents for 25-30 cold test.

There were one or two export inquiries for cargoes of gasoline, but no confirmed sales were reported. Business can be done a shade below the prices posted by the leading refiners. U. S. Motor in single tank cars delivered to the local trade is now held at 11¾ cents a gallon, an advance of ¼ cent for the week.

Kerosene has stiffened considerably, but water white is still available at 8 cents a gallon in tank cars delivered. Export inquiries have been fairly numerous, particularly for cased goods. Water white in cases is quoted at 17.90 cents while standard white is held at 16.90 cents with indications that these prices might still be shaded a trifle on a firm bid. The tank wagon price is steady at 13 cents a gallon. Foreign buyers are closely following the trend of the domestic market. A good deal of last week's inquiries were from British, French and Italian buyers.

Bunker oil has weakened and one of the leading refiners reported a customer had been offered Grade C oil at $1.70 per barrel alongside ship, the equivalent of $1.64½ cents f. o. b. refinery, but virtually all of the leading refiners were asking $1.75 at the refinery.

Diesel oil held fairly steady at $2 per barrel, but activity in this oil as well as in bunker was chiefly confined to the filling of standing contracts. Nevertheless there were more numerous export inquiries than during the preceding week.

Gas oil was rather quiet. For 36-40 at Bayonne refineries the asking price remained at 5¼ cents a gallon. Stocks are fairly large and foreign buyers are showing little interest at present. Refiners, however, are not inclined to press sales, but are waiting for a better export demand to strengthen the market.

Waxes held fairly firm. European buyers are purchasing freely, and numerous sales of from 500 to 150 tons were reported. White crude scale wax is offered sparingly. European candle manufacturers are still credited with the bulk of the buying. Fully refined waxes are in growing demand also, but the movement in these waxes is not as large as in crude scale. Match waxes were strong under a steady foreign call coupled with a good domestic demand.

Three Mixed Cargoes Sold At New Orleans

By Special Correspondent

NEW ORLEANS, Sept. 8.—Three mixed cargoes of gasoline and kerosene averaging 40,000 barrels each were sold last week. It also was rumored that a large refiner had put through two cargoes in a quiet way.

Foreign buying interest is still keen, and with the first signs of further advances in the Gulf Coast market it is expected that there will be another boom in export business. As it is many of the large refiners are unwilling to press sales at current prices regardless of the proximity of the fall.

Prices have not changed much over the past week. U. S. Motor gasoline is quoted from 9 to 9¼ cents while 64 gravity is held at 11 to 11¼ cents with comparatively little available at the inside price. Present Oklahoma prices figure somewhat higher than the export prices in the Gulf, and for this reason many of the larger sellers are inclined to hold out for better export prices.

Cased gasoline enjoyed a fairly good demand and orders for from 10,000 to 25,000 cases were fairly numerous. The bulk of these were from Australia and Japan. Refiners are asking $2.40 a case for gasoline and $2.60 for 64-66 gravity in cargo lots. There is a steady movement of cased goods against old contracts.

Export demand for kerosene continues up to expectations. Sentiment is better than at any time since spring. In addition to the mixed cargoes sold, considerable business has been put through in a smaller way. The cargoes were sold at 5¾ cents for prime white and 6¾ cents for water white. Some refiners are now asking 6 and 7 cents, respectively. German buyers have been inquiring for large quantities of kerosene but are entertaining ideas much below those of refiners and consequently no sizable dealings were consummated with these interests.

Cased kerosene is moving in a fairly steady way. Several orders for from 5000 to 15,000 cases were heard of during the course of the week. At the Gulf, refiners are quoting water white at $1.75 per case and prime white at $1.65 a case.

Gas oil held up well. It was rumored that a cargo of 26-28 sold at the Gulf at 4¼ cents for October shipment to Germany but confirmation was lacking. Refiners are offering rather sparingly, as stocks are somewhat depleted. The asking price for 32 plus was 4⅜ cents a gallon, but business in this oil was along very conservative lines, and no cargo movements were uncovered.

Demand for bunker oil has improved somewhat but in the main foreign buyers

Export Markets

Furnished by big exporting oil companies. No actual sales. Record for statistical purposes only.

Illuminating Oils

	Sept. 8	Sept. 1
Bulk, gal., Bayonne	6.50	6.50
Barrels, gal., Bayonne, cargo	13.50	13.50
Cases, gal., Bayonne	16.90	16.90

Prices for water white oil (150 test) are 1 cent higher than those for standard white.

Gasoline-Naptha
(Cents per Gallon)

U. S. Motor, dead bulk	12.25	12.25
U. S. Motor, cases	26 40	26 40
Export Naptha bulk	13 25	13 25
63-66 deg. bulk	14.50	14.50
66-68 deg. bulk	16.00	16.00

Tide Water Oil Company
(f. o. b. Bayonne)

58-59 deg. bulk	12.75	12.75
58-59 deg. cases	26.40	26.40
Export grade, U. S. Motor Specifications bulk	12.25	12.25
63-65 deg. bulk	14 50	14 50
68-72 deg. bulk	17.00	17.00

	Bulk	Barrels	Cases
Standard white 110	6.50	13.50	16.90
Water white 150	7.50	14.50	17.90

The Texas Company

Gasoline, cases		26.40	26.40
Kerosene	**Bulk**	**Barrels**	**Cases**
Standard White	6.50	13.50	16.90
Prime White	7.00	14.00	16.40
Water White	7.50	14.50	17.90

New York Market

The following prices are quoted by eastern seaboard independent refineries on products which are manufactured from Mexican crude transported from Tampico to the refinery by tanker and from California crude.

	Sept. 8
*Gasoline (U. S. Motor) gal., Tank Cars	- .11¼
‡Bunker oil (F. O. B. New York) bbl...	-1.75
Diesel Oil F. O. B. Refinery bbl	-2.00
Gas Oil (36-40 refinery) gal	-.05¼
†Kerosene, 45-150 W.W.Bulk Del.,N.Y...	-.08

*Delivered.
†Nominal.
‡Plus .06¼ charge lighterage.

Gulf Export Market

(Actual Sales Prices)

U. S. Motor gasoline	-09½
64 Gravity gasoline	-11
Water white kerosene	-06¾
Prime white kerosene	-05¾
26-28 Gas Oil	-04½
32 plus Gas Oil	-04½
Bunker Oil, F. O. B	-1.35

Crude Oil Prices All Fields

EASTERN FIELDS

	1924 Sept. 8	1923 High		1923 Low		1922 High		1922 Low	
Bradford-Allegany	$2.85	Feb.15	$4.25	Nov.13	$2.60	Jan.1	$4.00	July 19	$3.00
Other Pennsylvania	2.75	Feb.15	4.00	Nov.13	2.35	Jan.1	4.00	July 19	3.00
Cabell	1.45	Feb.15	2.76	Nov.13	1.20	Jan.1	2.61	July 19	1.86
Corning	1.65	Feb.15	2.30	Nov.14	1.25	Jan.1	2.40	July 20	1.75
Somerset	1.55	Feb.15	2.55	Nov.13	1.15	Jan.1	2.40	July 19	1.65
Somerset Light	1.70	Feb.15	2.80	Nov.13	1.30	Jan.1	2.65	July 19	1.90
Ragland	.90	Feb.15	1.10	July 10	.75	Jan.1	1.25	July 19	1.00

Somerset oil run prior to Oct. 1, 1923, takes price of 6 cents lower than above quotations.

CENTRAL STATES FIELDS

Wooster	$1.65	Feb.19	$2.50	Nov.9	$1.25	Jan.1	$2.70	Sept.21	$1.99
Lima	1.83	Feb.19	2.58	Nov.9	1.43	Jan.1	2.48	July 20	1.98
Indiana	1.63	Feb.19	2.38	Nov.9	1.23	Jan.1	2.28	July 20	1.78
Princeton	1.62	Feb.19	2.37	Nov.8	1.22	Jan.1	2.27	July 20	1.77
Lodi	1.65	Feb 19	2.50	Nov.9	1.25	Jan.1	2.70	July 20	1.90
Illinois	1.62	Feb.19	2.37	Nov.8	1.22	Jan.1	2.27	July 20	1.77
Waterloo, Ill	1.10	Feb.19	1.85	Nov.9	.70	Jan.1	1.75	July 20	1.25
Plymouth	1.00	Feb.19	1.75	Nov.9	.60	Jan.1	1.65	July 20	1.15
Canadian Petrolia	2.23	Feb.19	2.98	Nov.9	1.83	Jan.1	2.88	July 20	2.38

MID-CONTINENT AND NORTH TEXAS FIELDS

Below 30	$1.10	Currie	$1.35
30-32.9	1.25	Mexia	1.35
33 and above	1.50	Powell	1.35

Humble's Ranger Prices

Below 30	$1.00	33-35.9	$1.40
30-32.9	1.20	36 and above	1.60
Wichita and Archer Cos.	1.35		

Magnolia's Price Schedule
North and North-Central Texas, Okla., and Kan.

Below 28	$ .90	Corsicana, light*	$1.25
28-30.9	1.00	Corsicana, heavy	.90
31-32.9	1.10	Thrall	1.00
33 and above	1.25	*Including Powell and Mexia	

NORTH LOUISIANA-ARKANSAS FIELDS

Caddo, 38 degrees and above	$1.35	do 35 to 37.9	$1.15
do 35 to 37.9	1.25	do 32 to 34.9	1.00
do 32 to 34.9	1.15	DeSoto	1.35
do below 32	1.00	Crichton	1.15
Homer, 35 and above	1.35	Bellevue	1.25
do 33 to 34.9	1.25	Smackover, 26 and above	.95
do 31 to 32.9	1.15	25 to 25.9	.80
do below 31	1.00	24 to 24.9	.70
Haynesville, 33 and above	1.25	Below 24 Be	.60
do below 33	1.15	Stephens 28 and above	1.00
El Dorado, 33 and above	1.35	do 26-27.9	.95
do below 33	1.25	do 23-25.9	.80
Bull Bayou, 38 and above	1.30	do below 23	.60
		Cotton Valley	.80

GULF COASTAL FIELDS

	1924 Sept. 8	1923 High		1923 Low		1922 High		1922 Low	
Spindletop	$1.35	Mar.15	$1.75	Aug.18	$1.00	Jan.1	$1.25	Dec.30	$1.25
Goose Creek "A"	1.35	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Goose Creek "B"	1.15	Mar.15	1.50	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Sour Lake	1.35	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Humble	1.35	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Batson	1.35	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Hull "A"	1.35	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Hull "B"	1.15	Mar.15	1.30	Jan.1	.80	Jan.1	1.25	Dec.30	1.25
West Columbia	1.35	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Edgerly	1.35	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Vinton	1.35	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Jennings	1.35	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Dayton	1.35	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Saratoga	1.35	Mar.15	1.75	Aug.18	1.00	Jan.1	1.25	Dec.30	1.25
Orange "A"	1.35								
Orange "B"	1.15								
Pierce Junction "A"	1.35								
Pierce Junction "B"	1.15								

WYOMING FIELDS

Elk Basin	$1.45	Feb.17	$2.10	Nov.9	$ .95	Jan.1	$1.90	Aug.4	$1.20
Grass Creek	1.45	Feb.17	2.10	Nov.9	.95	Jan.1	1.90	Aug.4	1.20
Big Muddy	1.00	Feb.17	1.65	Nov.9	.45	Jan.1	1.40	Aug.4	.70
Salt Creek	1.10	Feb.17	1.65	Nov.9	.60	Jan.1	1.40	Aug.4	.70
Lance Creek	1.40	Feb.17	2.10	Nov.9	.80	Jan.1	1.90	Aug.4	.20
Rock Creek	1.20	Feb.17	1.75	Nov.9	.60	Jan.1	1.50	Aug.4	.80
Osage	1.40	Feb.17	2.10	Nov.9	.80	Jan.1	1.90	Aug.4	1.20
Cat Creek, Mont	1.45	Feb.17	2.10	Nov.9	.95	Jan.1	1.90	Aug.4	1.20
Sunburst, Mont	.90	Feb.17	1.50	June 6	.70				

CALIFORNIA

14-19.9	$1.00	25-25.9	$1.10	30-30.9	$1.25
20-20.9	1.01	26-26.9	1.13	31-31.9	1.28
21-21.9	1.02	27-27.9	1.16	32-32.9	1.31
22-22.9	1.03	28-28.9	1.19	33-33.9	1.34
23-23.9	1.05	29-29.9	1.22	34-34.9	1.37
24-24.9	1.07			35 and above	1.40

are reluctant to purchase much at current asking prices. Some refiners are quoting $1.35 per barrel while others are asking up to $1.40. The easier tendency in New York circles has not had much bearing on the Gulf market, as yet. Diesel oil is quiet, the movement being chiefly on contracts.

Lubricating oils have not shown much change. Big consumers are purchasing along very conservative lines. It was rumored that one of the big Independents closed a small cargo of assorted lubricants, but details were withheld. Much of the foreign demand is for cylinder stocks.

British Importations

During the week ended Aug. 18, importations of petroleum into the United Kingdom totaled 19,427,214 gallons. Larger receipts were:

Consignee	Imperial Gallons	Product	Port of Origin
At London—			
Lubricating and Fuel	774,675	Gas Oil	Philadelphia
Lubricants and Fuel	166,033	Fuel Oil	Philadelphia
Lubricants and Fuel	1,351,200	Lubes	Batoum
Medway Oil	1,471,470	Kerosene	Batoum
Anglo Amer	1,431,750	Naptha	Baton Rouge
At Liverpool—			
British Mex.Pet	1,062,000	Gasoline	Fall River
At Bristol—			
Shell	1,069,575	Benzine	Rangoon
Shell	856,050	Benzine	B. Pappan
Shell	235,789	Fuel Oil	Tampico
Anglo Mex	1,372,800	Gasoline	S. Pedro
Anglo Mex	1,270,000	Fuel Oil	Tampico
At Hull—			
E. E. Prickett	223,845	Benzine	Danzig
At Manchester—			
Shell	1,284,075	Benzine	B. Pappan
At Southampton—			
Shell	1,917,857	Fuel Oil	Tampico
Nat'l Benzole	900,000	Gasoline	S. Pedro
At Glasgow—			
British Mex.Pet	904,000	Fuel Oil	Houston
British Mex.Pet	1,428,000	Gasoline	Fall River
British Mex.Pet	1,200,000	Gasoline	S. Pedro

New York Market

(Actual Sales Prices)

The following prices are quoted by eastern seaboard independent refineries on products which are manufactured from Mexican crude transported from Tampico to the refinery by tanker and from California crude.

	Sept. 8	Sept. 1
Navy Gasoline, Tank Cars Delivered	11¼-11¾	11¼-11¾
Navy Gasoline, Tank Cars Bayonne	10½	10½
Kerosene, 45-150 W W Tank, Cars Del'd	.08	.08
Grade C Bunker, f.o.b. N.Y.	1.75	1.75
Diesel Oil f.o.b. Refinery	2.00	2.00
Gas Oil, 36-40, Bulk, refinery	05¼	05¼

LUBRICATING OILS
(Actual Export Sales Prices)

CYLINDER STOCKS	Sept. 8	Sept. 1
Penna. Filtered D 600 bbls	30	30
Penna. Filtered E 600 bbls	28 -29	28 -30
Unfiltered 600 s. r. bbls	23 -24	24 -25
Unfiltered 650 s. r. bbls	29½-30	30 -31
600 flash s. r. bbls	33	33 -34
Western 600 s. r. bbls	14 -15	14½-15½
Bloomless 30-31 grav. bbls	20	20 -21
RED PARAFFIN (bbls.)		
300 vis. at 100° F	24 -25	24 -25
250 vis. at 100°F	22	22
175 vis. at 100°F	21 -22	21 -22
High Viscosity Paraffin	29	29
225 vis. pale 100 at 100°F	15 -16	15 -16
SPINDLE (bbls.)		
200 vis. Pale at 100°F	21	21
180 Pale	20	20
150 Pale	17	17
BLACK OIL (bbls.)		
25-30 c. t.	14 -15½	14 -15½
15 c. t.	15 -16½	15 -16½

(Continued on next page)

(Continued from page 105)

WAXES

(Actual Export Sales Prices)
(F. A. S. Carload Lots)

WHITE CRUDE SCALE	Sept. 8	Sept. 1
122-124 A. M. P.	05¼	05¼–5½
124-126 A. M. P.	05⅜	05⅝
MATCH		
105-108 A. M. P.	06	06
111-115 A. M. P.	06⅛	06⅛
FULLY REFINED		
118-122 A. M. P.	05⅝	05⅝
123-125 A. M. P.	05¾	05¾
125-127 A. M. P.	05¾–06	05¾–06
128-130 A. M. P.	06¼	06¼
130-132 A. M. P.	06½	06½
133-135 A. M. P.	07¼	07¼
SEMI REFINED		
122-124 A. M. P.	05¾	05¾
YELLOW CRUDE SCALE		
124-126 A. M. P.	05¼	05¼

PETROLATUMS

(Actual Sales Prices)

Snow White	12¾	12¾
Lily White	10	10
Cream Petroleum Jelly	07¾	07¾
Veterinary	04	04
Light Amber	03¾	03¾
Dark Amber	03½	03½
Dark Green	03¾	03¾

(Cooperage Basis)

MEDICINAL OILS

(Actual Sales Prices)

Domestic 875-885 s.g.drums	1.15	1.15
Domestic 865-870 s.g.drums	90	90
Russian 885-890 s.g.80-85 vis. drums	1.10	1.10

GULF EXPORT MARKET

(Actual Sales Prices)

Gasoline

	Sept. 8	Sept. 1
Navy, Bulk	09 –09½	09
64-66, Bulk	11 –11½	11
Navy, Cases (Cargo Lots)	2.40	
64-66, Cases (Cargo Lots)	2.60	

KEROSENE

Water White, bulk	06¾–07	06¾
Prime White, bulk	05¾–06	05¾
Water White, cases (Cargo Lots)	1.75	
Prime White, cases (Cargo Lots)	1.65	

GAS AND BUNKER OILS

26-28, gravity, bulk	04¼	04¼
32 plus, bulk	04⅜	04⅜
Grade C, Bunker oil (F.O.B.)	1.35	1.35

Fight On Over Assets Of Indiahoma

Staff Special

ST. LOUIS, Sept. 4.—Secured and unsecured creditors of the Indiahoma Refining Co. through their committee on "Acquisition of Assets" has offered $567,000 for properties of the company. Hearing into the offer was in progress here this week before Referee in Bankruptcy Coles.

Representatives of the collector of internal revenue objected to the sale. He presented a claim of the government for $708,481.39 in back taxes from 1916 to 1923 alleging that it is a prior lien against the properties. The creditors committee offered to pay around $50,000 in taxes in addition to the sum mentioned above.

The creditors committee plans to form a new corporation, to float a bond issue to retire present outstanding bonds and interest, and to give creditors preferred stock for their claims. Stockholders would receive little or nothing. Attorneys for the bondholders oppose the plan.

Refiners', Compounders' Supplies

Following are the average market prices for the week on materials used by refiners and Compounders f. o. b. shipping point as effective this date.

Benzol

	Sept. 8	Sept. 1
Pure Water White, Tanks.....gal....	24–25	24–25
90%.....Tanks.....gal....	–23	–23

Above are industrial grades of benzol; motor grades run 2c under to 2c over gasoline tank wagon prices at point of delivery.

Refiners' Supplies

Soda Ash light 58% bags cwt.	–$1.38	–$1.38
Silicate of Soda 60 deg.....Drums.....cwt.	–1.70	–1.70
Sal Soda wks.....cwt.	1.10–1.25	1.10–1.25
Caustic Soda 76% solid.cwt.	–3.10	–3.10
Chloride of Lime.....cwt.	.....	.....
Works.....	1.90–2.10	1.90–2.10
Sulphuric Acid 60 deg. tank cars f. o. b. shipping point.....per ton	9.00–10.00	9.00–10.00

Compounders' Supplies (Open Market)

Vegetable Oils—

Linseed carloads Spot...gal.	–1.02	–1.04
September..Second Half...	– .97	–1 02
October	– .92	– .94
November-April.....	– .90	– .91
Tanks, spot	– .96	– .96
Less carload Spot.....gal.	–1.05	–1.05
Less than 5 Bbls. Spot.....	–1.07	–1.07
Boiled, tank Spot.....gal.	– .98	– .98
Boiled, carloads Spot....gal.	–1.04	–1.04
*Soya Bean Spot, Tanks..lb.	– .10¾	– .10¾

Animal Oils—

English Degras.....lb.	–.05	.04¾–.05½
Domestic Degras, bbls. carloads....lb.	.04¼–.05	.04¼–.05
*Horse.....lb.	–.09	–.09

Oleic Acid—

Dist.....lb.	–.09½	–.09½
Saponified.....lb.	–.09½	–.09½

Lard Oils—

Prime Winter Strained.. 1 to 1½ffa.40/45c.t.lb.	.16½	8.16¾
Extra Winter Strained.. 2 to 4½ffa.40/45c.t.lb.	.14¾	.14¼
Extra..... 4 to 5 ffa.40/45c.t.lb.	.13¾	.13¾
Extra No. 1..... 7 to 10 ffa.40/50c.t.lb.	.12¼	.12¼
No. 1.....15 to 18 ffa.40/45c.t.lb.	.11¾	.11¾
No. 2.....22 to 23 ffa.40/45c.t.lb.	.11½	.11½
Prime Edible Tallow under 1¾ ffa. 40/45c.t.N.Y.....lb.	–.10½	–.10¾
Tallow acidless.....lb.	–.11½	–.11½
Lard Stearine.....lb.	–.17	–.17¼
Oleo Stearine.....lb.	–.16¾	–.17

Neatsfoot Oil—

Pure.....bbls.-lb.	.15	.15
Extra.....do lb.	.12¼	.12¼
No. 1.....do lb.	.11¾	.11¾
Cold pressed.....lb.	.19½	.19½

Fish Oils—

Menhaden Oil Light pressed.....gal.	–.65	–.65
White.....gal.	–.70	–.70
Yellow bleached.....gal.	–.68	–.68
*Herring tank cars coast.....gal.	–.40	–.40
Whale, extra winter bleached.....gal.	–.80	–.80
Seal.....gal.	Nominal	

Naval Stores—

Turpentine, N.Y.....gal.	.91	90
Turpentine†.....gal.	.83¾	.83¼
Rosin B. N. Y.....Bbl.	5.90	5 90
Rosin F. N. Y.....Bbl.	6.20	6 15
Rosin B†.....Bbl.	4.75	4 65
Rosin F†.....Bbl.	5.00	4.82½
Rosin Oil 1st run.....gal.	.40	.40
Rosin Oil 2nd run.....gal.	.46	.46

Pine Tar—

Kiln Burnt.....Bbl.	10.50	10.50
Retort.....Bbl.	10.50	10.50

†Savannah, Ga. market.
*Nominal

Benzol Demand Active; Supply Scarce

By Special Correspondent

NEW YORK, Sept. 8.—Following is a review of the markets for supplies and oils used in compounding and refining.

Benzol

Curtailed production strengthened market considerably. Prices expected to advance within short time. Consumers anxious to purchase ahead and find trouble locating supplies.

Sulfuric Acid

More active but demand still spasmodic. No price changes recorded. Stocks fairly large.

Linseed Oil

"Buyers hold off," seems to be the watchword at present. Prices are from 1 to 3 cents lower for futures. Spot unchanged. Seed easier, Large deliveries against old contracts but little forward buying developed. Spot oil $1.02 a gallon, car lots, cooperage basis. Spot stocks moderate. Some crushers anxious to press sales of future, hence the waiting attitude of buyers.

Animal Oils

Slightly easier. Demand less spirited. Stocks generally fair. Lard oil export request lighter. Oleo oil marking time. Neatsfoot oil slightly more active. Degras holding steady. Stearine quiet. More interest in tallow oil.

Fish Oils

Marking time. Crude menhaden quiet, unchanged. Fish catch still small. Light pressed in better demand. Bleached oils dull. More interest in cod oil. Whale oil neglected.

Naval Stores

Turpentine dull. Price fluctuations narrow. Southern markets dull. Rosins in better demand. Paper manufacturers buying low grades. Rosin oil in better request. Tar and pitch quiet.

Caustic Soda

Little fresh buying recorded. Good movement on contract. Export interest keen but buyers hold off. Stocks moderate. Prices unchanged.

Soda Ash

Dull. Buyers holding off. Sellers more inclined to press sales. Market waiting for new contract prices already overdue.

Bleaching Powder

Better inquiry for forward delivery. Spot business somewhat improved. Big makers more confident of outlook. No price changes.

DETROIT, MICH., Sept. 8.—C. F. Battenfeld Oil Co. has just installed additional equipment at its Detroit plant and is now compounding all its oils at this plant. The company opened its first filling station here the first of July, according to C. F. Battenfeld, president.

Glycerine Remedy For "Frozen" Oil In Winter Driving

By Robert K. Floyd

DETROIT, Sept. 5

AN INTERESTING lubricating experiment was conducted on an automobile motor which lasted for a period of five years. The oil was drained every 250 miles and fresh oil put in. The old oil was allowed to settle for two weeks and tested as to viscosity.

Whatever body had been lost through dilution was replaced by compounding and the oil used again. A 350 viscosity paraffin base oil was used in the summer and a 200 viscosity zero was used in the winter. At the end of 75,000 miles the bearings were all in perfect condition, never having been touched. The compression was good, the rings still functioning perfectly.

Inasmuch as most motors need attention to bearings and ring readjustment at from 10,000 to 20,000 miles, the principles brought to light by this experiment are important to automobile manufacturers and owners alike. The outstanding facts in this experiment are about as follows:

(1) An automobile motor can be operated practically indefinitely without appreciable wear.
(2) Wear occurring in motors comes from:
   (a) oils which have become diluted by the unburnt portion of the gasoline;
   (b) dust, dirt, carbon and foreign material present in the oil which tend to act as an abrasive.

The statement will at once be made that it is too costly as to time and money to change oil every 250 miles. This is undoubtedly true and these evils will probably not be eliminated by this method. The larger companies are now working on air filters to remove the dust and dirt of the atmosphere before it is drawn into the carbureter.

This will help greatly to keep abrasives out of the oil. There are also devices in the process of perfection designed to remove light fractions from the oil, preventing loss of viscosity. Along the line of discussing dilution of lubricating oil with heavy unburnt ends of gasoline, it might be worth while to say that the next big development in motors will be when the refiners are manufacturing a fuel which will permit of 150 pounds compression.

This will mean little or no oil dilution, and greater efficiency of operation of the motor.

The motor manufacturers are only waiting for this development to redesign their motors and raise the compression. When such a fuel is used under high compression there is found to be a heavy decrease of carbon. This carbon is ordinarily formed by the cracking of the present day fuel owing to its lack of uniformity.

Among the other bad lubricating conditions we find motors working under is one found in the winter time. When a motor is operating normally there is a light film of lubricationg oil between the pistons and walls. We will say for the sake of argument that this motor stands out in a low temperature for several hours—low enough to congeal the oil in the crank-case so that the pump will not circulate it quickly.

The driver climbs in and by choking the motor washes off the film with raw gasoline. He is apt to run several miles before his oil has reached the dry surfaces. If the motor is new, with close fits, scored surfaces sometimes result. If it is an old one, it will merely wear a little more. Suffice it to say that it is always advisable to use an oil of light enough body and low enough cold test to insure rapid circulation when the motor starts.

Another common winter lubrication difficulty arises from the presence of ice in the lubricating system. Many people do not know that the combustion of a pound of gasoline produces a pound and a half of water.

Approximately:

$$C_5 - H_{12} + 8O_2 \quad 5\ CO_2 \quad 6\ H_2O$$
$$60 + 12 \qquad\qquad 12 + 96$$
grams grams

Most of the reports of "frozen oil," "broken oil pumps," "motor frozen stiff," come from this cause. The easiest way to handle this problem is the use of four ounces of glycerine in the crank-case. Glycerine, being a member of the alcohol family, has the characteristics of a high affinity for water and first-class anti-freeze properties. It is bland, practically inert chemically and has a sufficiently high boiling point to stay in the crank-case. It is heavier than oil and seeks the lowest level when it picks up the water.

In concluding these remarks one other evil is worth mentioning. This is the lack of understanding among oil companies as to what the body test of a light, medium and heavy oil should be. A recent extensive canvass and testing of some 60 brands of oil was made showing that the range of viscosity in "summer medium," for instance, ran from 220 vis. at 100 degrees F Saybolt to 500 seconds.

Obviously, this wide margin of difference shows some degree of ignorance as to what a medium oil should be to produce ideal results. A motorist when asking for a "quart of medium" is entitled to some uniformity in what he is buying.

The thoughts presented here by Mr. Floyd are well worth consideration both by oil men and automobile engineers because Mr. Floyd has spent years as a lubrication engineer and a compounder and marketer of lubricating oils, in association with Frank Harris Floyd, his father.

He is called in frequently by automobile manufacturers when by reason of a change of design or from some other cause they are confronted by a specially difficult lubricating problem. He helps to solve these problems by furnishing an oil suited to the work to be done.—Editor.

Wife Of C. H. Laessig Dies On Pacific Coast

Staff Special

TULSA, Sept. 6.—Mrs. Mamie Laessig, wife of C. H. Laessig, president of the Automobile Gasoline Co. of St. Louis, died suddenly at Los Angeles on the morning of Sept. 4, according to word received here today. Death was caused by heart disease. Mrs. Laessig was a sister of the late Ed. Cowhey of Tulsa, who operated the Tulsa Oil Products Co. prior to his recent death.

Mrs. Laessig is survived by a daughter, Miss Marion, and a son, Alfred, in addition to her husband. She was apparently in good health and was enjoying a vacation on the coast with her daughter. Mr. Laessig was driving through from St. Louis to meet her when he received word of her death. Funeral arrangements have not been announced.

McMaster Again Cuts Gasoline Prices

CHICAGO, Sept. 8.—Report reached Chicago, Saturday that Gov. W. H. McMaster of South Dakota had cut the service station price of gasoline to 16 cents at Huron and 16½ cents at Aberdeen. The news was that Standard Oil Co., and Independents as well, had met the price, but it was denied at the Chicago offices of the Standard.

Price conditions have improved considerably in Standard Oil Co. of Indiana territory recently. Examination of the figures in tank wagon price table will show that the 2-cent differential between tank wagon and service station prices has been restored generally. At only four or five listed points is there indication of a demoralized market.

National Safety Congress Program Published

CHICAGO, Sept. 9.—The petroleum section of the Thirteenth Annual Safety Congress will be housed in the Brown Hotel at Fourth street and Broadway, Louisville, Ky. The activities of the oil group start at 10 o'clock, Tuesday morning, Sept. 30 and continue three days.

The early part of Tuesday's meeting will be devoted to reports from officers and committees. The Petroleum Section will function precisely like a separate convention after Sept. 29, but on that day the whole National Safety Council will assemble in the Brown Hotel as a body. During the remaining three days the several sections will do their work apart, using all the available assembly room in nine hotels.

W. R. Boyd, Jr., acting director of the American Petroleum Institute, New York, is the first speaker. He will discuss "the Oil Industry's Responsibility to Safety." Following Mr. Boyd, F. A. Epps, of the Tide Water Oil Co., New York, will talk on "Fire Prevention in Oil Properties."

The Second Session

The first order of business for the section on Wednesday morning, Oct. 1, is the election of officers. The present officers of the section are named in a paragraph hereto subjoined.

Four prominent men in the oil industry will discuss the same subject during the Wednesday session. Each one will talk from the standpoint of a different branch of the industry. The subject is "Effective Methods of Safety Organization."

D. J. Wallace, Humble Oil & Refining Co., Houston, Texas, will speak for the producing branch, and V. R. Currie, of The Texas Co., Houston, Texas, will lead the subsequent discussion.

H. M. Stevenson, Humble Pipe Line Co., Houston, Texas, takes the platform second, to deal with the topic from the standpoint of a pipe line operator. E. D. Murphey, Cosden & Co., Tulsa, Okla., leads the discussion on Mr. Stevenson's address.

William D. Winslow, The Texas Co., New York, is the respresentative of the refining branch of the industry. He will talk about safety from the manufacturer's view point. E. A. Timm, Standard Oil Co. of New Jersey, Bayonne, N. J., leads the discussion.

F. C. Singleton, Standard Oil Co. of Indiana, Chicago, represents the marketing branch of the industry. His address will deal with experiences of the Standard Oil Co. in safety work. The discussion of Mr. Singleton's talk will be led by Roy S. Bonsib, Standard Oil Co. of New Jersey, New York City.

The Third Session

H. C. Fowler, United States Bureau of Mines, Petroleum Experiment Station, Bartlesville, Okla., will deliver the first address of the third day, Thursday, Oct. 2. His talk will be a "Review of the Petroleum Accident Record in Oklahoma During 1923."

Roy W. Kelly, Associated Oil Co., San Francisco, Calif., will tell of "California's Recent Progress in Petroleum Safety," which is the last scheduled address. After each of these two talks the house will be open to a general round table discussion.

The present officers of the Petroleum Section who will be replaced or re-instated at the election Oct. 1, are as follows:

Chairman, D. J. Wallace, Humble Oil & Refining Co., Houston, Texas.

Vice-Chairman, Producing Division, V. R. Currie, The Texas Co., Houston, Texas.

Vice-Chairman, Pipe Lines Division, D. J. Murphey, Cosden & Co., Tulsa, Okla.

Vice-Chairman, Manufacturing Division, E. A. Timm, Standard Oil Co. of New Jersey, Bayonne, N. J.

Vice-Chairman, Marketing Division, Roy S. Bonsib, Standard Oil Co. of New Jersey, New York City.

Secretary, E. J. Senne, Vacuum Oil Co., New York City.

Jobbers Lose Complaint On Gasoline Rate

By Special Correspondent

WASHINGTON, Sept. 9.—Retailers of gasoline at Greenwood and Yazoo City, Miss. who have been trying for months to obtain what they think more reasonable freight rates, from Eastland, Tex., Eram, Okla. and Shreveport and Destrehan, La. have taken a fall at the hands of J. O. Cassidy, an Interstate Commerce Commission examiner sent to enquire into their allegations that a rate of 34 cents per 100 pounds is unreasonable.

Cassidy has reported to his superiors that, after listening to all the testimony, he is of the opinion that 34 cents is not an unreasonable charge. The complaint was made by K. E. Brister and associates against the Vicksburg, Shreveport & Pacific and other railroads.

The thing that made the 34-cent rate a cause of complaint was the fact that it was made up of a rate of 14 cents to Vicksburg, Miss., from Shreveport, a distance of 172 miles. The haul from Vicksburg to Yazoo City and Greenwood is 85 miles. For instance, the charge is 20 cents, or nearly one half more for less than half the distance.

Cassidy said it did not hurt the public if the railroads west of the Mississippi charged only 14 cents for a haul of 172 miles, when as in this case the total charge to Yazoo City and Greenwood was not unreasonably high. He advised his superiors to dismiss the complaint.

LOUISVILLE, KY., Sept. 8.—Roberts Bros. Oil Co., jobbers of lubricating oils and greases, is installing additional storage at its plant here for gasoline. The company buys in carload lots only, according to H. P. Roberts, president.

U. S. Uses Two Thirds Of World's Oil

By Special Correspondent

WASHINGTON, Sept. 9.—A world-wide view of the consumption of petroleum and its products is in preparation by the department of commerce. It will be published, if plans do not fail, in Commerce Reports of Sept. 9. It will be considerable of a document which may be had from the department at a comparatively small price.

While the report is not yet completed it will show that last year the world consumed more than 38 billion gallons, of which the United States used more than 25 billion gallons, or, as usual, about two-thirds of the world's consumption was in the United States.

That, however, is not the total of consumption to be credited to the United States. More than a billion and a half gallons of bunker oil was supplied to ships at American ports. Addition of that gallonage to the sum of products consumed on land in the United States brings the total of American consumption to well over 70 per cent.

The other 30 per cent of the world's production was consumed in largest measure by Great Britain, Russia, Canada, France, Mexico, British India and Argentina, in the order mentioned. Their consumption is so small that, in comparison with that of the United States it looks as if it might well be measured by quarts. Yet some of those countries reduce the figures of production and consumption to metric tons, thereby making the figures much easier to carry in one's head.

The department of commerce thinks it worthy of comment that the wide distribution of large oil consuming countries throughout the world is shown by the fact that, of the 16 leading consumers, exclusive of the United States, two are in north America, one in the West Indies, two in South America, five in western Europe, two in eastern Europe, and four in the far east. American per capita consumption is the greatest. The other consumers, ranked by their per-capita consumption, are Cuba, Canada, Chile and Argentina, all western hemisphere countries.

In other words, the old world, while it uses much oil because there are many people in it, has never really learned to use petroleum and its products.

Cleveland Stock Market

September 5

				1923	
	Par	Bid	Asked	High	Low
Canfield Oil Co.	$100	135	....	....	....
do pfd.	100	95	....	95¾	95
National Refining	25	39	40	53	33¾
do pfd.	100	124	130	126	116
Paragon Refining	25	6¾	7	12¾	5¼
do pfd.	100	40	50	75	40
Fred G. Clark Co.	10	3¾	4	6	2

x Ex. Dividend

Transactions In Oil Shares on New York Stock Exchange

1923 High	1923 Low	1924 High	1924 Low	Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions week ended Sept. 6 Sales	First	High	Low	Last	Ch'ge
.....	.....	43	25	(sh) 200,000	N.P.	American Republics	.....	.....	.....	.....	.....	.....	.....	.....
29½	24⅛	34⅝	27⅝	$40,060,500	$25	Associated Oil	37½cQ	July 25, 24	2,500	28⅜	28¾	28¼	28¼	— ⅜
160	98¾	149½	78¾	50,000,000	100	Atlantic Refining	.....	June 16, 24	4,000	87½	87½	85	86¾	—1¼
120	115	118	109¾	20,000,000	100	do pfd	$1¾Q	Aug. 1, 24	100	112¼	112¼	112¼	112¾	—1
35	9⅛	21⅝	14	14,000,000	25	Barnsdall Corp. A	.....	Apr. 30, 21	7,300	19	19⅜	17	17	—2
22	6	16¾	10	3,713,275	25	do B	.....	Apr. 30, 21	600	13½	13½	12½	12½	—1
9⅛	1¾	5	1¾	(sh) 150,000	N.P.	Caddo Central O. & R	.....	.....	100	1¾	1¾	1¾	1¾	0
29¾	17⅛	29¾	19½	$ 17,377,000	$25	California Petroleum	43¾cQ	Sept. 2, 24	5,900	22	22¼	21	21¼	— ½
110½	90⅝	107	92½	11,955,100	100	do pfd	$1¾Q	July 1, 24	300	95½	96	95½	96	+1⅜
62¼	22¾	40¾	25⅛	(sh) 1,217,427	N.P.	Cosden & Co	.....	Aug. 1, 23	13,000	27½	27⅝	26⅛	26¼	— ¾
90¾	85¾	95	83½	$ 6,998,000	$100	do pfd	$1¾Q	Sept. 1, 24	500	84	84½	†83½	83⅝	— ⅜
54	23	47¼	31⅜	19,830,000	100	General Asphalt Co	.....	.....	7,300	44	44	39¾	39⅞	—3⅛
85	60	84	71½	7,416,000	100	do pfd	$1¾Q	Sept. 2, 24	300	83½	83½	81½	81½	—1½
.....	.....	45	38⅜	38,015,100	25	General Petroleum	50cQ	June 15, 24	17,500	41⅜	41½	40	40⅜	— ⅝
78	40¾	82½	61	25,000,000	100	Houston Oil Co	.....	.....	8,200	72¼	72¼	70	70⅜	—1⅝
11¼	3⅜	9¼	6⅜	(sh) 450,000	N.P.	Independent Oil & Gas	25cQ	June 30, 24	100	7½	7½	7½	7½	+ ¼
19	1	2⅜	⅛	$ 5,000,000	$25	Indiahoma Refining Co	.....	July 1, 21	700	⅜	⅜	¼	⅜	+ ⅛
8¼	3⅜	7⅜	3¾	7,830,450	10	Indian Refining Co	.....	Dec. 15, 20	200	5¾	5¾	5¾	5¾	0
49½	49½	74	60	2,298,400	100	do pfd	.....	Dec. 15, 21	.....	.....	.....	.....	.....	.....
19¼	7⅛	16⅞	10⅜	1,094,744	N.P.	Invincible Oil Corp	.....	.....	4,900	13	13	12½	12⅝	— ⅛
3½	¾	1	¼	$ 1,784,620	$10	Kansas & Gulf Corp	.....	.....	.....	.....	.....	.....	.....	.....
28¾	16	37⅜	25⅜	(sh) 261,950	N.P.	Maracaibo Oil	.....	.....	1,600	29⅞	29⅞	27½	27½	—1⅜
59⅜	17½	42	29	(sh) 1,549,190	N.P.	Marland Oil Co	.....	July 1, 23	38,100	32⅞	33⅛	31⅝	32½	— ⅜
193	182	.....	.....	$ 45,942,800	$100	Mexican Petroleum Co	$3Q	July 21, 24	.....	.....	.....	.....	.....	.....
105¼	100¼	.....	.....	12,000,000	100	do pfd	$2Q	July 21, 24	.....	.....	.....	.....	.....	.....
23¾	5¾	24⅜	14¾	(sh) 357,900	N.P.	Mexican Seaboard Oil	50cQ	Aug. 15, 24	9,200	21⅜	21⅞	20⅝	20¾	— ⅜
23¼	6	22¾	12⅞	(sh) 270,000	N.P.	do V. T. C	50cQ	Aug. 15, 24	1,000	21	21⅜	20⅜	20½	— ⅜
12¼	3½	6⅞	1	$ 29,798,450	$10	Middle States Oil Corp	.....	July 1, 23	5,200	1⅜	1½	1¼	1⅜	0
67	31	39¾	31¼	$ 39,626,000	25	Ohio Fuel Supply Co	62½cQ	July 15, 24	600	38	38¼	37¾	38¼	— ¼
52¼	31¼	58¼	45	(sh) 3,500,000	N.P.	Pacific Oil Co	$1S.A.	July 21, 24	12,000	47⅞	48⅛	46⅝	47¾	0
93⅝	53	61¾	42⅝	$ 48,292,450	$50	Pan American P. & T	$1Q	July 21, 24	12,000	54½	54¾	52	52½	—1⅜
86	50⅝	59⅜	41¾	81,280,000	50	do Class B	$1Q	July 21, 24	34,400	53½	54	51⅝	51⅞	—1⅛
6¾	1¾	3¾	1⅝	(sh) 198,770	N.P.	Panhandle P. & R	.....	.....	.....	.....	.....	.....	.....	.....
68	27½	40¾	35	$ 3,855,500	$100	do pfd	.....	July 2, 23	.....	.....	.....	.....	.....	.....
69¼	19¾	42¾	31¾	(sh) 1,479,702	N.P.	Phillips Petroleum	50cQ	June 30, 24	19,600	33½	33½	32½	32⅞	— ⅝
6	1¾	4⅜	1⅜	$ 29,622,925	$25	Pierce Oil Corp	.....	.....	2,600	1¾	1¾	1⅝	1⅝	— ⅛
44½	16	39¾	20	15,000,000	100	do pfd	.....	Feb. 1, 22	900	25	25	23½	23½	—2½
58½	17	43½	22¾	11,467,850	50	Producers & Refiners	.....	Sept. 15, 23	2,500	29	29⅞	28	28½	— ¾
49½	36	47⅜	22	2,845,350	50	do pfd	87½cQ	May 5, 24	.....	.....	.....	.....	.....	.....
32	16¼	26¾	20	70,091,425	25	Pure Oil Co	37½cQ	June 1, 24	3,400	23⅞	23⅞	22¾	23¼	— ¼
100	82½	98½	92	13,000,000	100	do 8% pfd	$2Q	July 1, 24	100	97¾	97¾	97¾	97¾	+ ¼
55¼	40½	59⅜	41½	(sh) 611,579	13.40	Royal Dutch, N. Y. shares	$3.18¾	Aug. 12, 24	8,400	43¾	43⅝	42¼	42¾	— ¾
41¼	29⅛	41⅜	33	(sh) 152,063	£2	Shell Transport & T	$1.07½	July 23, 24	300	35½	35½	34¼	34¼	+ ½
19¼	12⅜	20⅛	15¾	(sh)10,000,000	N.P.	Shell Union Oil Corp	25cQ	June 30, 24	11,300	16¾	17	16½	16½	— ¼
95	89½	96¾	91½	$ 20,000,000	$100	do pfd	$1½Q	Aug. 15, 24	900	96	96	96	96	0
16	6¼	14⅞	10⅜	7,204,030	10	Simms Petroleum Co	.....	.....	9,600	14	14¼	13⅝	14	+ ⅛
39⅜	16	27⅜	15	(sh) 4,480,782	N.P.	Sinclair Consolidated	.....	May 31, 24	15,100	17⅝	17¾	17½	17½	0
99¾	80¼	88½	77	$ 18,914,900	$100	do pfd	$2Q	Aug. 15, 24	.....	.....	.....	.....	.....	.....
35	12⅛	29	17⅛	20,579,090	25	Skelly Oil Co	.....	.....	3,400	19⅜	19½	18⅝	18¾	— ⅛
64½	47⅛	68⅛	55½	233,630,950	25	S. O. California	50cQ	June 16, 24	9,400	58	58⅛	56½	57¼	— ⅝
44⅛	30⅛	42¼	33	504,251,775	25	S. O. New Jersey	25cQ	June 16, 24	11,100	35⅞	36	35	35	— ½
118¼	114¾	119½	115⅞	199,972,900	100	do pfd	$1¾Q	June 16, 24	700	118⅜	118½	118¼	118⅜	+ ⅛
6¾	2	8⅜	2⅜	(sh) 998,828	N.P.	Superior Oil Corp	.....	Dec. 20, 20	35,500	4⅛	4½	3⅝	4¼	+ ⅛
82⅛	34⅝	45¾	37¾	$164,450,000	$25	The Texas Co	75cQ	June 30, 24	10,000	41¾	41¾	39⅝	40⅜	+ ⅛
24¾	5½	15¼	8½	8,380,340	10	Texas Pacific Coal & Oil	.....	June 30, 23	1,200	9⅜	9⅜	8⅝	9	— ⅛
144	94	151	118½	50,003,700	100	Tide Water Oil Co	$1Q	June 30, 24	300	124¼	124½	120¾	122	—1½
14½	1¼	6¼	3¾	(sh)2,957,529	N.P.	Transcontinental Oil Co	.....	.....	13,900	4¾	4⅞	4⅜	4½	— ¼
99¾	81	126	94	$ 18,000,000	$100	Union Tank Car Co	$1¾Q	Sept. 2, 24	400	118	119	118	118	+1
114	100	116¾	106¼	12,000,000	100	do pfd	$1¾Q	Sept. 2, 24	.....	.....	.....	.....	.....	.....
30¾	20	29¾	23⅛	(sh) 460,000	N.P.	White Eagle Oil & Ref	50cQ	July 20, 24	400	24	24	23¾	23⅞	— ⅛

*New High †New Low xEx-Dividend Total Sales 348,600

Standard Oil Stock Traded In New York Curb Market

1923 High	1923 Low	1924 High	1924 Low	Outstanding Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions week ended Sept. 5 Sales	First	High	Low	Last	Ch'ge
19¾	13½	18	14¾	£3,000,000	£1	Anglo American	55cS.A.	May 15, 24	2,600	15¼	15⅜	15	15¼	0
7⅞	2½	4⅞	2¾	(sh) 500,000	N.P.	Atlantic Lobos	.....	.....	400	2¾	3¾	† 2¾	2⅞	— ⅜
150	108	265	155	$ 1,000,000	$100	Borne-Scrymser	$4S.A.	Apr. 15, 24	.....	.....	.....	.....	.....	.....
94½	69	85½	57	10,000,000	50	Buckeye Pipe Line	$1Q	June 14, 24	760	57	57½	†51	52	—5½
.....	.....	52	48¾	3,000,000	25	Chesebrough Mfg. Co	62½cQ	June 30, 24	600	49⅜	50	49⅜	49¾	+ ¼
118	110	115	113	1,000,000	100	do pfd	$1¾Q	June 30, 24	.....	.....	.....	.....	.....	.....
50	32¼	54⅞	39¾	10,000,000	25	Continental Oil	50cQ	June 16, 24	.....	.....	.....	.....	.....	.....
47½	15	20	11¾	1,500,000	25	Crescent Pipe Line	.....	Sept. 15, 23	.....	.....	.....	.....	.....	.....
168	85	149	110¾	3,000,000	100	Cumberland Pipe Line	$3Q	June 16, 24	.....	.....	.....	.....	.....	.....
117	87	105	94½	5,000,000	100	Eureka Pipe Line	$2Q	Aug 1, 24	20	95	95	95	95	0
78	55	69¾	58	16,000,000	100	Galena Signal Oil	$1Q	June 30, 24	10	54⅛	54⅛	54⅛	54⅛	+ ⅛
105	104	103¾	100½	4,000,000	100	do new pfd	$2Q	June 30, 24	.....	.....	.....	.....	.....	.....
116	108	116	103¾	2,000,000	100	do old pfd	$2Q	June 30, 24	.....	.....	.....	.....	.....	.....
41¼	28	43¾	30	43,750,000	25	Humble Oil & Ref	30cQ	July 1, 24	1,700	36	36½	35⅜	35⅝	+ ⅜
171	115	161	126	20,000,000	100	Illinois Pipe Line	$6S.A.	June 30, 24	130	130½	132	130	132	0
123	92	119	98¼	89,222,750	25	Imperial Oil coupons	75cQ	Sept. 2, 24	765	106	106½	104½	106	+ ½
103	78	100	87	5,000,000	50	Indiana Pipe Line	$2Q	Aug. 15, 24	220	91½	91½	†87	87	—3
24¾	13¼	22¼	16¾	(sh)7,118,138	N.P.	International Petroleum	25cQ	June 30, 24	15,000	19¼	20⅛	19¼	20⅛	+ ⅜
168	123	162	122	$188,000,000	100	Magnolia petroleum	$1Q	July 5, 24	155	133	133	130	130	—3
29	19½	25⅞	20⅝	6,362,500	12½	National Transit	25cQ	June 14, 24	100	21¾	21¾	21¾	21¾	— ¼
188	70	97	54¾	5,000,000	100	New York Transit	50cQ	July 15, 24	260	60	62	59½	62	+3
109½	90	107½	80	4,000,000	100	Northern Pipe Line	$3S.A.	July 1, 24	10	84	84	84	84	0
85¾	48¾	79⅜	55	60,000,000	25	Ohio Oil Co	50cQ	June 30, 24	2,000	60	62	60	60½	+1½
45¾	10½	43	27	10,000,000	25	Penn.-Mex. Fuel	.....	.....	1,200	34	34⅛	33⅞	33⅞	+2⅜
700	152	269	194½	60,000,000	100	Prairie Oil & Gas	$2Q	July 31, 24	2,730	209	213½	209	211	+3
335	93	111	100	81,000,000	100	Prairie Pipe Line	$2Q	July 31, 24	390	106¼	106½	105½	106	0
212½	161	230	175	4,000,000	100	Solar Refining Co	$5S.A.	June 20, 24	40	184	185	184	185	+3
116	87	100	90	10,000,000	100	Southern Pipe Line Co	$2Q	Sept. 2, 24	100	90½	90½	90	90	— ½
195	100	171	117	20,000,000	100	South Penn Oil Co	.....	Sept. 30, 22	300	140	143½	140	141	+4
88¼	66½	89	81	3,500,000	100	Southwest Pa. Pipe Lines	$3Q	July 1, 24	10	85	85	85	85	0
69⅞	49⅜	68⅜	54¼	221,706,668	25	S. O. Indiana	62½cQ	June 16, 24	20,200	57	58⅜	56⅝	56⅞	+ ⅜
57⅜	36½	50¼	32½	8,000,000	25	S. O. Kansas	.....	June 16, 24	700	34½	34½	34	34⅜	— ⅛
133	80	120	101	16,784,047	25	S. O. Kentucky	$1Q	June 30, 24	3,400	112⅛	112¾	111	111	— ½
285	186	256½	198	3,000,000	100	S. O.. Nebraska	$5S.A.	June 30, 24	320	244	246	240	242	+5
48¾	35⅛	55¾	37¾	225,324,650	25	S. O. New York	35cQ	June 16, 24	4,800	39⅜	40⅜	39¼	39⅝	+ ⅜
320	270	336	275	14,000,000	100	S. O. Ohio	$2½Q	July 1, 24	70	288	297	288	291	+3½
118	116	125½	118	7,000,000	100	do pfd	$1¾Q	Sept. 2, 24	.....	.....	.....	.....	.....	.....
859	21	81	34	1,722,931	100	Swan & Finch	.....	Nov. 1, 19	10	43	43	43	43	—2
58¾	35½	69¼	56½	61,525,075	25	Vacuum Oil Co	50cQ	June 20, 24	3,900	64	65¼	63½	64	+ ¼
28	19	30	25½	100,000	10	Washington Oil Co	.....	Jan. 31, 22	.....	.....	.....	.....	.....	.....

42 years Scientific Refining

H. B. S.

MOTOR OILS

A high grade product

WRITE OR WIRE
- FOR SAMPLES -
AND QUOTATIONS

The National Refining Co.

National Headquarters: National Bldg.

Cleveland, Ohio

3 Modern Refineries

Coffeyville, Kansas Findlay, Ohio Marietta, Ohio

HSH-340-VENT VALVE

A double acting vent valve that permits free flow of air to tank as contents are withdrawn and expulsion of air as tank is filled. Poppets have ground seats insuring an air tight tank, Valves have wire mesh screens to prevent back fire; any pressure or vacuum can be maintained.

HYDE-SCHNEIDER-HALEY MFG. CO.

ROCKFORD -:- ILLINOIS

Complete Equipment for Filling Stations, Bulk Stations and Oil Distributors

QUICK SHIPMENTS

New York Curb Bonds

Week Ended Sept. 5

	High	Low	Last	Ch'ge
Anglo-Amer. 7½s	102¼	102	102	— ¼
Cities Serv. 7s B	124	124	124	+ ⅞
do 7s C	97¾	97½	97¾	— ¼
do 7s D	96¼	95¾	96	0
Galena S. O. 7s	105½	105½	105½	+ ¼
Gen. Pet 6s	100¾	100½	100½	— ¼
Gulf Oil 5s	98⅛	98	98	— ⅛
Phillips Pet 7½s w w	102	101½	102	—2
Pure Oil 6½s	95¾	95½	95½	— ¼
Skelly Oil 6½s w i	101¾	101¾	101¾	— ¼
S.O.New York 7s '25	101	100⅞	100⅞	— ⅛
do 7s '27	105	105	105	— ½
do 7s '28	106⅛	105½	105¾	— ¼
do 7s '29	106¼	105¾	106⅛	+ ⅛
do 7s '30	106½	106	106	— ½
do 6½s	107½	107½	107½	+ 1
Sun Oil 7s	102¾	102¾	102¾	+ ⅛
Tidal Osage 7s	103¾	103¾	103¾	— ¼
Union Oil Cal.6s '26	101¾	101¾	101¾	0
United Oil Prod. 8s	39⅝	39	39⅝	+1⅝
Vacuum Oil 7s	106⅝	106¼	106⅜	+ ⅛
Valvoline 7s	102½	102½	102½	— ¾

New York Bonds

Week Ended Sept. 6

	High	Low	Last	Ch'ge
Atlantic Refg.deb.5s	99	98⅝	99	+ ⅜
Barnsdall Corp. 8s	101¼	100¾	101½	+ ½
Calif. Pet. s f 6½s	100¼	99⅞	100⅛	+ ⅜
Empire G. & F. 7½s	96¾	95¼	95¾	— ⅜
Humble O. & R. 5½s	100	99¾	100	+ ⅛
Marland 8s ser A	105¼	105	105¼	+ ¼
do 7½s ser B	103	102¾	103	+ ¼
do 7½s with war	123	123	123	+1¼
Mex.Pet.of Del.cvt.8s	105⅞	105	105	— ½
Pan-Amer P&Trans 7s	105	104¼	104¾	— ⅝
Pierce Oil deb 8s	102¼	101½	102	+ ¾
Sinclair Con. col. 7s	93	92⅝	92⅜	— ⅜
do 6½s	86½	86	86½	+ ⅛
Sinclair Crude 6s	100¼	100	100	0
do 5½s	100¼	100	100	— ¼
Sinclair Pipe L s f 5s	84½	84	84⅜	— ⅛
Tidewater Oil 6½s	103⅜	103	103⅜	+ ⅛
Union Oil of Calif.6s	102¼	100¼	100¼	—2
do 5s	99¼	98¼	98¼	— ⅞
Union Tank Car 7s	104½	104	104	— ⅜

New York Curb Market

1923 High	1923 Low	1924 High	1924 Low	Par Value	Stocks	Transactions Week Ended Sept. 5 Sales	First	High	Low	Last	Ch'ge
10	4¼	7	4¼	10	Ark. Nat. Gas	300	4⅝	4⅝	4⅝	4⅝	+ ⅛
1⅝	.65	1⅛	.75	1	Boston & Wyo	500	.85	.85	.82	.82	—.08
7⅜	3⅛	6⅝	3⅜	25c	Carib. Synd	1,000	3½	3¾	3½	3½	— ⅛
195	128	155	132	100	Cities Service	380	144	144½	143½	144	0
70	64¼	75¼	67¾	100	do pfd	700	75½	76⅜	75⅜	76⅛	+ ¾
6¾	5⅞	7	6⅜	10	do pfd. B	.....	.....	.....	.....	.....	.....
19¼	12¾	16	13¾	10	do Bkrs. Sh	900	14¼	14⅜	14⅛	14⅜	+ ⅛
7⅝	1⅜	9¼	2⅛	N.P.	Creole Synd	36,900	8	* 9¼	8	8⅜	+ ⅛
18½	5	8	3	N.P.	Derby O. & R	100	3	3	3	3	0
49½	22	34¼	17⅛	N.P.	do pfd	.....	.....	.....	.....	.....	.....
1	.10	.60	.12	5	Federal Oil	27,000	.17	.42	.17	.36	+.21
2½	.23	.60	.25	10	Glenrock Oil	.....	.....	.....	.....	.....	.....
68¼	45¾	65	56¾	25	Gulf Oil Corp	2,200	58½	59⅞	58½	59⅜	+1⅜
9⅛	1	2⅝	.87	N.P.	Gulf State O.& R	.....	.....	.....	.....	.....	.....
4	1⅜	2⅝	1¾	N.P.	Kirby Petroleum	.....	.....	.....	.....	.....	.....
.....	.....	5¾	2⅞	N.P.	Lago Petroleum	13,400	4¾	5⅛	4¾	4⅞	+ ⅛
5⅛	1½	4⅞	2	N.P.	Marland of Mexico	.....	.....	.....	.....	.....	.....
20¾	12⅞	19¾	16	10	Mountain Prod	6,700	18	18⅝	17½	18	+ ⅛
15¾	12⅜	.....	.....	5	Mutual Oil Co	.....	.....	.....	.....	.....	.....
15½	8⅜	14	9⅛	5	do cfts	15,200	10¾	11	10½	10⅝	— ⅛
6⅛	3⅛	6¼	4¼	5	New Bradford	500	4¼	4⅜	† 4¼	4⅜	+ ⅛
52	15⅛	44	20	10	New England Fuel	300	37	37	33	33	—3⅞
21⅜	5	14	8⅜	25	New York Oil	400	9	9	9	9	0
1⅛	.45	.80	.50	10	Omar O. & G	200	.50	.50	.50	.50	+.05
13	¾	3½	1	N.P.	Peer Oil Corp	1,000	1	1	1	1	0
14¾	9¼	16⅛	12¾	10	Pennok Oil	7,400	15¼	16⅛	15	15¼	+ ¾
.....	.....	57¾	53¾	25	Red Bank Oil	9,800	46	46¾	41	43¾	—2¼
6⅞	2	5⅜	3⅞	N.P.	Ryan Consolidated	.....	.....	.....	.....	.....	.....
14	6¼	10½	7¼	10	Salt Creek Cons	100	7¼	7¼	7¼	7¼	0
25¼	15¼	26¾	19⅛	10	Salt Creek Prod	2,600	23	23¼	22½	23¼	+ ½
4⅞	.75	2½	.80	5	Sapulpa Refining	.....	.....	.....	.....	.....	.....
4	.65	1⅜	.30	5	Seaboard O. & G	.....	.....	.....	.....	.....	.....
13½	6	16	8	10	Tidal Osage	.....	.....	.....	.....	.....	.....
.....	.....	139	132	100	Union of California	10	132	132	132	132	0
10⅞	4	8¾	4⅝	5	Wilcox O. & G	1,600	4⅞	5	4⅞	4⅞	+ ⅛
.....	.....	13⅜	7	N.P.	Woodley Petroleum	2,100	11	11⅜	10⅝	10⅜	— ⅛

Pittsburgh Stock Exchange

1923 High	1923 Low	1924 High	1924 Low	Par Value	Stocks	Transactions Week Ended Sept. 5 Sales	First	High	Low	Last	Ch'ge
10	4¼	7	4¼	10	Ark. Nat. Gas	311	4⅛	4¾	4⅛	4¾	+ ⅛
33¾	33	40½	35¾	N.P.	Columbia Gas	.....	.....	.....	.....	.....	.....
27	22¾	28¾	26⅜	25	Lone Star Gas	735	28½	28⅜	28¼	28¼	0
58	51	59¼	51	50	Manuf. L. & H	955	58	*59¼	58	58¾	+ ¾
19	11	16⅜	11⅜	1	Ohio Fuel Oil	20	13½	13½	13⅜	13½	— ⅛
66	30¾	39¼	31⅜	25	Ohio Fuel Supply	1,290	38¼	38¼	37¾	38	— ⅜
24	18⅝	26	22¾	25	Okla. Nat. Gas	490	26	26	25⅞	26	+ ¼
10½	5¾	9¾	6	5	Pittsburgh O. & G	.....	.....	.....	.....	.....	.....
14	5½	10½	7¾	10	Salt Creek Cons	622	7¼	7¼	7⅛	7⅛	— ⅛
13½	7	16¾	9¾	10	Tidal Osage	.....	.....	.....	.....	.....	.....
.....	.....	92	92	100	do pfd	.....	.....	.....	.....	.....	.....
29½	28¾	33	27¾	25	Union Nat. Gas	160	32	32	32	32	0
....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....

†New high record

Pittsburgh Curb Market

1923 High	1923 Low	1924 High	1924 Low	Par Value	Stocks	Transactions Week Ended Sept. 5 Sales	First	High	Low	Last	Ch'ge
.....	.....	2½	2½	N.P.	Arkansas Fuel w.i	.....	.....	.....	.....	.....	.....
1½	.22	.76	.20	5	Colombia Synd	.....	.....	.....	.....	.....	.....
2¾	.26	.70	.30	5	Duquesne Oil	.....	.....	.....	.....	.....	.....
37	10	9½	6	10	Forest Oil	.....	.....	.....	.....	.....	.....
1¼	1	.15	.15	1	Grant Oil	.....	.....	.....	.....	.....	.....
68	46½	64¼	57	25	Gulf Oil Corp	.....	.....	.....	.....	.....	.....
.03	.02	.....	.....	1	Homer Union	.....	.....	.....	.....	.....	.....
24½	16⅛	21	21	N.P.	International Pet	.....	.....	.....	.....	.....	.....
.....	.....	4½	4½	N.P.	Lago Petroleum	.....	.....	.....	.....	.....	.....
8½	4	6	5	10	Marshall Oil	.....	.....	.....	.....	.....	.....
.36	.15	.39	.01	1	Mex. Wyoming	.....	.....	.....	.....	.....	.....
.....	.....	18	18	10	Mountain Prod	.....	.....	.....	.....	.....	.....
2½	1⅛	2⅛	1⅛	1	Oklahoma Eastern	100	1⅞	1⅞	1⅞	1⅞	— ⅛
2	.60	.77	.77	10	Omar O. & G	.....	.....	.....	.....	.....	.....
22½	7	8	5½	5	States Oil	.....	.....	.....	.....	.....	.....
.....	.....	14	10	10	Tidal-Osage, N. V	.....	.....	.....	.....	.....	.....

*New High †New Low x Ex Dividend